



S 15.

ANNUAL REPORTS
AND
PROCEEDINGS
OF THE
BELFAST NATURALISTS'
FIELD CLUB

SERIES II.
VOLUME VIII.



1918-19
TILL
1927-28.

Belfast:
PRINTED BY THE NORTHERN WHIG, LTD., BRIDGE STREET.

1929.



ANNUAL REPORT

... AND ...

PROCEEDINGS.



SERIES II.
VOLUME VIII.

Part I.
1918-19.

For Contents See Back of Cover.



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ANNUAL REPORT AND PROCEEDINGS
OF THE
BELFAST NATURALISTS'
FIELD CLUB,

FOR THE YEAR ENDING 31st MARCH, 1919,

(FIFTY-SIXTH YEAR).



SERIES II.
VOLUME VIII.



PART I.
1918-19.

Belfast:
PRINTED AT "THE NORTHERN WHIG" OFFICE, VICTORIA STREET.
1919.

BELFAST NATURALISTS' FIELD CLUB.

FIFTY-SIXTH YEAR, 1918-19.

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Ordinary Members of Committee :

Retire 1919.

N. Carrothers.

Mrs. Gibson.

R. Ll. Praeger, B.A.,
B.E., M.R.I.A.

Retire 1920.

W. B. Burrowes.

Major A. R. Derryhouse,
D.Sc., F.G.S., M.R.I.A.

Fergus M. Greeves.

Retire 1921.

Miss E. L. Andrews.

Robert Bell.

Rev. K. Dunbar.

SECTIONAL COMMITTEES.

1918-19.

JUNIOR SECTION.

J. A. S. STENDALL, *Chairman.*

MISS O. FERGUSON.
MISS K. WARD.
J. H. GILMOUR.
J. GOURLAY.

MISS S. BLACKWOOD,
Hon. Sec. of the Section,
6, College Green,
Belfast.

ASSOCIATE SECTION.

A. M'L. CLELAND, *Chairman.*

MISS S. BLACKWOOD.
N. CARROTHERS.
A. H. GEORGE.
J. R. H. GREEVES.

S. A. BENNETT, B.A., B.Sc.,
Hon. Sec. of the Section,
Campbell College,
Belfast.



Annual Report.

AT the close of the Fifty-sixth year the Committee have again to record an increased membership. 12 Ordinary, 4 Associate, and 4 Junior Members have been enrolled during the year; 14 members have intimated their decision to resign their membership; 5 members have died; so that at the end of the year the membership stands as follows:—Honorary 3, Corresponding 1, Life 3, Ordinary 280, Associate 14, and Junior 14. The Committee regret the loss during the year of Miss L. A. Walkington, LL.D., and Mr. J. N. Milne. Twelve meetings of Committee have been held during the Session, at which the attendances of members were as follows:—

A. M ^l I. Cleland ...	... 11	Mrs. Gibson ...	... 6
S. M. Macoun ...	... 11	S. A. Bennett ...	... 6
Miss S. Blackwood ...	... 10	R. Bell ...	... 6
Miss M. W. Rea ...	... 10	Mrs. Cleland ...	... 1
N. Carrothers ...	... 9	Rev. K. Dunbar ...	... 1
Dr. J. K. Charlesworth ...	... 9	Fergus M. Greeves ...	... 1
J. A. S. Stendall ...	... 9	Miss E. L. Andrews ...	... 0
S. Wear ...	... 9	Major A. R. Dwerryhouse	0
W. B. Burrowes ...	... 8	R. Ll. Praeger ...	... 0
R. May ...	... 8		

The excursion programme, somewhat curtailed, was carried out, the following being the places visited during the Summer Session:—

Saintfield (Half-Day)	... ..	18th May.
Giants' Ring, Drumbo, & Farrell's Fort		
(Half-Day)	... ..	1st June.
Muckamore (Half-Day)	... ..	15th June.
Comber (Half-Day)	... ..	29th June.
Raughlan ...	... ..	27th July.
River Lagan (Half-Day)	... ..	10th Aug.

At the excursions the average attendance of members and friends was roughly 45, a decrease of 6 on last year's figure of 51.

The Winter Session opened with a very successful *Conversazione*, held in the Carlton Hall on the 23rd October, 1918, at which some 240 members and friends were present.

During the Session the following papers (of which abstracts will be found in the Proceedings) were read:—

1918.

November 19th—"Interim Report on the Survey of the Isles of Strangford Lough," A. M'I. Cleland.

December 3rd—"Britain in the Ice Age"—Part I., Dr. J. K. Charlesworth, M.Sc., F.G.S., M.R.I.A.

December 17th—"The Bronze Age in Ulster," Charles Bulla.

1919.

January 7th—"Britain in the Ice Age"—Part II., Dr. J. K. Charlesworth, M.Sc., F.G.S., M.R.I.A.

January 21st—"The Warfare of Animals," Professor G. H. Carpenter, D.Sc., M.R.I.A.

February 18th—"The Fenland of East Anglia and its Vegetation," Professor R. H. Yapp, M.A.

March 18th—"Mexican Pyramids and Ancient Architecture," David E. Lowry.

April 1st—"The Adaptation to Environment of Deep Sea Life," A. Milligan, B.Sc.

The Strangford Lough Survey Committee has accomplished much useful work during the past summer; its report, which took the form of a lecture by the President of the Club, is given *in extenso* in the Proceedings.

The Treasurer will lay before you his Statement of Accounts, which shows a balance in hand of £9 12s 1d. The Reports of the Librarian, and of the Junior and Associate Sections, will be presented.

In conclusion, your Committee desire to tender their thanks to H. Armytage Moore, Esq., and Major Blackwood Price, of Saintfield, Miss Thompson, The Grange, Muckamore, Miss Fford, Raughlan, Rev. W. Cordner, Drumbo, and Canon Ryder, Drumbeg, for their hospitality and kindness extended to members

of the Club on the Summer Excursions; to the Press for publishing reports of the Excursions and Meetings; to the Superintendents of the Railway Companies for the way in which they have met our wishes in the difficult times through which we have passed; and to the Kindred Societies and Public Institutions that have favoured us with their Publications.

(Signed)

MARGARET W. REA, }
J. K. CHARLESWORTH, } *Hon. Secs.*

Librarian's Report.

The Library has been used to about the usual extent. From time to time we arrange new Exchanges of Proceedings with Kindred Societies. We have just completed arrangements for an exchange with the Essex Field Club.

(Signed)

SYLVANUS WEAR, *Librarian.*

Report of the Junior Section.

The membership on April 1st, 1918, was 26; during the year 4 new members have been elected, while 8 resignations have been notified, leaving a present membership of 22.

Six Excursions were arranged, in conjunction with the Associate Section, as follows:—

June 6th—Holywood Woods; June 18th—Shaw's Bridge to Drum Bridge; July 2nd—Macedon Point, Whitehouse; July 18th—Knock Brickworks; Aug. 6th—Carr's Glen; Sept. 10th—Squire's Hill Quarry.

Five Winter meetings were also held as follows:—

1918, Nov. 28th—"Fossils and how they are formed," by S. A. Bennett, B.A., B.Sc.; Dec. 12th—"Dispersal of Seeds," by Miss Olive Ferguson; "Archæology of the Upper Ards," by J. R. H. Greeves;

1919, Jan. 9th—"Natural History Photography," by Humphrey Gilmour; Feb. 20th—"Pond Life," by J. Gourlay; March 13th—"What we get from Coal," by A. M'I. Cleland.

The Section is extremely indebted to Mr. A. R. Hogg for supplying and showing a kinematograph film at two of the meetings, and to him tender grateful thanks.

The attendances during the past Session leave something to be desired, though out of so small a membership the percentage has been fair. An increased membership would greatly facilitate the working of the Section, and the Committee confidently appeal to the ordinary members of the Club to assist them to secure the desired increase.

(Signed)

S. BLACKWOOD, *Hon. Sec. of the Section.*

Report of the Associate Section.

The Meetings and Excursions of this Section were held according to programme, but the attendance was, in the opinion of the Members of the Committee, not such as to justify the continuance of the Section under existing conditions.

(Signed)

S. A. BENNETT, *Hon. Sec. of the Section.*

Dr. Treasurer's Account for the Year ending 31st March, 1919. Cr.

RECEIPTS.		PAYMENTS.	
To Balance	£33 5 6	By Printing Annual Report, 1917-18	£38 17 10
" Subscriptions (247 O., 12 A.)	63 5 0	" Postages for Proceedings, &c.	3 5 4
" Balances from defunct Sections:—		" Books, Printing, Stationery, &c.	24 18 2
Geological	£2 13 10	" Hire of Rooms for Meetings	6 3 0
Archæological	1 17 6	" Hire of Lantern for Meetings	5 5 0
Botanical	0 11 0	" Addressing and Postage of Envelopes for Meetings	4 13 10
Zoological	0 7 8	" " " Excursions	5 1 10
Balance from Excursions	5 10 0	" Advertising Meetings	1 1 8
" Sale of Proceedings and Flora	1 1 3	" Other Postages	1 0 9
" Interest on Bank Account	1 0 3	" Conversazione	0 2 0
	0 18 4	" Strangford Lough Survey	0 17 0
		" Junior Section	0 7 8
		" Fire Insurance	0 10 0
		" <i>Irish Naturalist</i>	2 0 0
		" Gratuities	1 0 0
		" Cheque Book	0 4 2
		" Balance	9 12 1
	£105 0 4		£105 0 4

War Savings Certificates for £62 and £25 towards publishing a new "Flora of the North-East."

Examined and found correct by us.

(Signed)

S. M. MACCOUN, Hon. Treasurer.

(Signed)

J. A. SIDNEY STENDALL, } Hon. Auditors.
SYLVANUS WEAR, }

Proceedings.

SUMMER SESSION.

SAINTFIELD.

On May 18th the first excursion of the Summer Session was held at Saintfield, under the leadership of Mr. S. A. Bennett.

The party visited the Church, and then walked through the demesne of Saintfield House, by permission of Mrs. Blackwood Price. Returning through Saintfield a quarry in the Silurian grits was visited. The party then proceeded to Rowallane, the grounds of which were kindly thrown open by permission of Mr. H. Armytage Moore. The Rock Garden—just in its prime—was a blaze of colour and much enjoyed by the members present.

The party was unusually large, 122 members and friends gathering at Rowallane, where tea was served. A vote of thanks to Mr. and Mrs. Armytage Moore, proposed by the President, and seconded by the Rev. C. H. Waddell, B.D., terminated the usual business meeting, at which six new members—Miss U. C. Slane, Mrs. Byrne, Miss Lowry, Messrs. Eric Lindsay, A. G. Lewis, and G. Crozel—were elected.

The only wild plant of note seen was the Adder's Tongue Fern (*Ophioglossum vulgatum*).

GIANTS' RING, DRUMBO, AND FARRELL'S FORT.

On June 1st fifty-four members and friends of the Club met the conductor (Mr. W. B. Burrowes) at Malone tram terminus and walked to the Giants' Ring. Mr. Burrowes explained to the party the recent research work carried out under the auspices

of the Belfast Nat. Hist. and Phil. Society in this important monument. A further walk of two miles brought the party to Drumbo, in the ancient graveyard of which the ruins of the Round Tower were inspected. Mr. R. May described the origin and uses of these early Christian Bell-houses, based on the authority of Petrie, O'Donovan, O'Curry, and Salmon. After tea, which was partaken of in the schoolroom, the usual business meeting was held, the President (Mr. A. M'I. Cleland) in the chair. A vote of condolence was passed on the death of Miss Walkington, who had always taken a great interest in the Club. The Rev. J. Cordner, B.A., was then thanked for his kindness in allowing the use of the schoolroom. Two new members were afterwards elected. On the return journey Farrell's Fort was visited. The botanists found Drumbo Glen interesting—*Melica uniflora*, *Asperula odorata*, *Polystichum aculeatum* were noted, also a fine plant of *Vicia sepium* with pure white flowers. *Ulex Gallii* was observed growing in a hedge on the road coming from Farrell's Fort.

MUCKAMORE.

The third excursion of the Summer Session was held on 15th June, when about twenty members and friends travelled by the 2 p.m. train to Muckamore. A pleasant walk of about two miles brought the party to Muckamore Abbey, where, by the kind permission of Captain Thompson, the historic grounds were visited. Muckamore House occupies the site of the ancient priory, and a small portion of the ruins of the Abbey are still standing outside the garden wall. Muckamore, one of the most celebrated monasteries in the Diocese of Connor, was founded by St. Colman Ela, late in the sixth century. His mother was a sister of St. Columbkille. Mr. R. May gave a short historical account of the Abbey. The party, by the kind permission of Major Maxwell, also visited the beautiful grounds of the Model Farm.

COMBER.

The fourth excursion of the Summer Session took place on 29th June, when about 24 members visited Comber and Rough Island. The party arrived at Comber at 2-20 p.m., and under the conductorship of the Rev. K. Dunbar proceeded by way of Castle Street and the Square to the Comber River. The route lay for some distance along a quiet country lane until it led to the shore half-a-mile from Island Hill. The estuarine marsh afforded a good field for the botanist. The rarer noted species here included *Spergularia rupestris*, *Apuim graveolens*, *Samolus Valerandi*, *Suaeda maritima*, and *Polygonum maculatum*. Other species, such as *Silene inflata*, *Salicornia herbacea*, *Glyceria distans*, *Plantago Coronopus*, *Ceanothe crocata*, *Glauca maritima*, *Spergularia media*, and *Festuca rubra* were also seen. On the shore near Castle Espie a large flock of over thirty Swans excited interest.

Tea was served in a field at Island Hill at 4-30. Owing to the tide being full it was found impossible to visit Rough Island. Those of the party who remained till the late train had a most enjoyable walk back to Comber by way of the fields through Cherry Valley.

The following 30 species of Birds were noted by Mr. Nevin H. Foster, M.B.O.U., during the afternoon:—Song-Thrush, Blackbird, Stonechat, Redbreast, Whitethroat, Willow-Wren, Sedge-Warbler, Hedge-Sparrow, Blue Titmouse, Wren, Grey Wagtail, Meadow-Pipit, Swallow, House-Martin, Greenfinch, House-Sparrow, Chaffinch, Corn-Bunting, Yellow Bunting, Reed-Bunting, Starling, Jackdaw, Rook, Skylark, Mute Swan, Landrail, Redshank, Curlew, Common Tern, Black-headed Gull, and Herring-Gull. The most interesting ornithological feature was the observation of the Stonechat (one female seen), as the severe Winter of 1916-17 had exterminated this species in some districts in Ireland [*vide Irish Naturalist*, Vol. XXVI.].

The four common species of Woodlice were found during the few minutes available for collecting in suitable places, but only one Millepede, a *Polydesmus*, was seen.

RAUGHLAN.

The fifth Summer excursion took place on 27th July, when 7 members and 1 friend, under the conductorship of Mr. S. M. Macoun, travelled by the 10 o'clock train to Lurgan, and thence drove via Kinnegoe to Raughlan, a wooded peninsula jutting out into Lough Neagh. Glorious sunshine favoured the party, and a pleasant day was spent exploring the locality. Previous to departure from Raughlan in the afternoon the President, Mr. A. M'I. Cleland, thanked Miss Fforde for her kind permission to visit her place, and the party returned via Derrymacash to Lurgan. Tea was served in the Shankhill Restaurant, and at the subsequent business meeting Miss Adams and Mr. Merrifield were elected ordinary members. The 5-54 train brought the members back to Belfast.

Along the margin of the lake, both above and below the present water level, the ground was carpeted with large patches of *Littorella lacustris*. On a bridge near Lurgan the Scale Fern, *Ceterach officinarum* was found growing in company with *Asplenium Adiantum-nigrum*, *A. Trichomanes*, and *A. Ruta-muraria*. By the side of a deserted cottage *Matricaria discoidea* and the Tea-Plant, *Lycium barbarum*, were noted. Only 3 species of Sedges were observed, viz., *Carex Goodenowii*, *C. panicea*, and *C. flava*. The most interesting botanical find of the day fell to the conductor, who discovered *Spiranthes Romanzoffiana* growing in a dry meadow about fifty yards from the water's edge. In addition to the above mentioned the following of our more local plants were identified :—*Hypericum tetrapterum*, *Lythrum Salicaria*, *Cicuta virosa*, *Enanthe crocata*, *Pulicaria dysenterica*, *Lysimachia vulgaris*,

L. Nummularia, *Mentha arvensis*, *Lycopus europæus*, *Prunella vulgaris*, *Alisma ranunculoides* (a plant ten inches in height noted), *Sagittaria sagittifolia*, and *Butomus umbellatus*.

Little attention was given to Ornithology, but the song of the Chiffchaff was heard—this being its Autumn resumption—whilst Sedge-Warblers were continually in evidence mimicing the songs of several other species. Many Black-headed Gulls were on the lough, the majority of them in immature plumage. Some collecting was done in the Invertebrate groups. The collection of Fresh-water Mollusks did not contain any novelties. In the Class Crustacea the four common species of Woodlice were identified, as were also the fresh-water Isopod, *Asellus aquaticus*, and the fresh-water Amphipod, *Gammarus locusta*. The Myriapods collected included *Tachypodsiulus albipes* (= *Iulus niger*), *Lamycetes fulvicornis*, and a specimen which is doubtfully referred to as *Monotarsobius dubosqui*. The specimens of *M. dubosqui* proved an addition to the Co. Armagh fauna, and were of such a distinct variety that they have been described subsequently in the *Irish Naturalist*, Vol. XXVIII., p. 4, 1919, as “var. *fosteri*,” in honour of their captor. Among Insects the only order to which any attention was paid was that containing the “Bristle-Tails,” and of these two species were obtained, *Campodea gardneri* and *C. fragilis*.

RIVER LAGAN.

The sixth excursion of the Summer Session was held on 10th August, along the banks of the Lagan from Shaw's Bridge to Drumbeg. A party of 30 members and friends met at the hour appointed, and, as the district is one peculiarly rich in plant life, the botanists were soon hard at work, the following plants being specially noted:—*Ceterach officinarum*, *Asplenium Trichomanes*, *Epilobium hirsutum*, *Hypericum quadrangulum*, *Lotus uliginosus*, *Lythrum salicaria*, *Valeriana sambucifolia*, *Butomus umbellatus*,

Lycopus europæus, *Nasturtium amphibium*, *Epipactis latifolia*, *Equisetum hyemale*, *Sagittaria sagittifolia*, *Linaria Cymbalaria*, *Typha latifolia*, and *Solanum Dulcamara*. In the river *Potamogeton pectinatus* appeared to be dominant.

On reaching Drumbeg tea was served in the Parochial Hall, the use of which had been very kindly permitted by Canon A. R. Ryder, D.D. After tea the usual business meeting was held, the President (Mr. Cleland) in the chair. One ordinary member—Mr. Eustace Gordon—was elected. The party then visited the Church, where the fine memorial gate and the yew tree arches in the churchyard, also the beautiful memorial windows in the Church itself, were much admired.

From the Church the members proceeded to view the grounds of Drum House, which had been very courteously thrown open by the present owner, Sir Samuel R. Keightly. Here the party separated, some returning to town by the road, some by the river. Of the latter a few crossed to Edenderry by the weir bridge, and so varied their return journey.



Winter Session.

NOTE.—*The authors of the various Papers of which abstracts are given, are alone responsible for the views expressed in them.*

CONVERSAZIONE.

The Winter Session opened with a Conversazione, held in the Carlton Hall on Wednesday, 23rd October, about 212 members and friends being present. Tea was served again this year in the Restaurant from 8-15 till 8-45 p.m., thus leaving more room for exhibits in the large Hall.

The following exhibits were contributed :—

GEOLOGY.—Mr. R. Bell showed a fine collection of basaltic minerals. Mr. W. Green had on view a very interesting series of fossils from the Upper Cretaceous beds of Co. Antrim. Mrs. A. M'I. Cleland exhibited a number of specimens illustrating the Geology in the neighbourhood of Ballycastle, Co. Antrim; and Mr. Cleland, an excellent example of chalcedony from Carnmoney quarry. Dr. Charlesworth showed, with the aid of the microscope, sections of basalt, limestone, and sandstone. Mr. J. Gourlay, fossils from Squire's Hill.

BOTANY.—Mr. N. Carrothers, photographs and pressed specimens of wild flowers. Mr. A. W. Stelfox, wild roses in fruit, accompanied by sketches illustrating the distinguishing features of the various species; *Rhamnus catharticus* from Creagh Bog, Toome, Co. Antrim; *Vaccinium Vitis-Idaea* in fruit, grown as a garden plant. Mr. E. A. Armstrong, damage wrought in narcissus bulbs by the narcissus flies—*Merodon equestris* and *Eumerus strigatus*; also photos. and pressed specimens of Primulas of various species. Mr. S. A. Bennett, The Water Ranunculi of

Co. Down. Mr. J. R. H. Greeves, plants from the Strangford Lough area. Rev. C. H. Waddell, mosses from the Strangford Lough area, also *Galium cruciatum* from Mountstewart grounds. Rev. W. R. Megaw, *Triticum caninum* from Cullybackey; *Poa compressa* from near Holywood; *Poa nemoralis* from Ballymena; *Galium sylvestre* from Co. Antrim; *Galium Mollugo* from Garron Point and *Rumex sanguineus* from Helen's Bay. Miss M. W. Rea, mounted seaweeds from northern coast of Co. Antrim and from the Strangford Lough area.

ZOOLOGY.—Mr. Herbert Malcomson had a fine exhibit of Lepidoptera, including mounted specimens showing protective resemblance in moths. Mr. J. A. S. Stendall exhibited under the microscope the circulation of blood in the foot of the Common Frog. An exhibit illustrating the structure of a bird was staged by the Belfast Municipal Museum.

ARCHÆOLOGY.—Miss E. Andrews, "The Glastonbury Lake Village," by Arthur Bulleid, F.S.A., and Harold St. George Gray; also pottery from Lake Village at Nuare. Mr. W. R. Pim, piece of the first "Gotha" that raided London—L32. Miss Mawdsley, domestic objects from British East Africa and Uganda. These included—cover for a plate, native work; whisk made of grass; native dress; bead-work, Swahili tribe; table-cover design and embroidery, native work; and a water-bottle, Masai tribe, from British East Africa. A bark-cloth from Uganda concluded this varied and interesting exhibit.

One of the most interesting exhibits of the evening was that devoted to the results of six months work by the Strangford Lough Survey Committee.

The Geological exhibit comprised a fine range of erratics from the drift of the various islands in the Lough visited during the Summer Session of 1918, viz.:—Rough Island, Reagh Island, Mahee Island, Sketrick Island, Chapel Island, Mid and South Islands, and Ringhaddy Island. The exhibit also included

specimens of pottery from Castle Espie and several species of snails. The Botanical finds are referred to above.

After tea the President, Mr. A. M'I. Cleland, took the chair, and in the course of his remarks said that some of their original members were still with them, though the Club was founded almost fifty-six years ago. He then commented on the reasons which led to the formation of the Junior Section, and read out the titles of six lectures to be delivered during the coming winter. At this stage Mr. Humphrey Gilmour was presented with a prize won in the Junior Section. The next item was the announcement of the winter programme. During the evening Mr. Joseph Robinson and Mr. A. M'Dowell were elected as ordinary members, Mr. Geoffrey G. Quick and Mr. Kenneth J. Quick as junior members.

STRANGFORD LOUGH SURVEY.

(Interim Report).

The first meeting of the Winter Session was held in the Museum on November 19th, the Vice-President (Mr. S. A. Bennett) occupying the chair. After a brief reference to the close of the war and the advent of peace, the President (Mr. Cleland) introduced the subject of the evening, the "Interim Report of the Strangford Lough Survey Sub-Committee," which first dealt with the topography of the lough, its tides, currents, islands, etc.

Some interesting facts were brought forward in connection with above, among them being the maximum sounding of 216 feet at the Lough entrance to the Strangford Narrows, diminishing to only 42 feet at the sea exit. Mr. Cleland went on to say that there were 230 islands, of which 95 were visible at high water. Thirty-three had an area of 10 acres and upwards. On the western side there was a long line of well-defined islands, while the eastern coast showed barren islets.

The nomenclature of the islands was next dealt with, from which it would appear that most of the islands are named from their colour or from their fancied resemblance to some object, or from being the resort of some particular animal. For instance, the "Selk" islands, three in number, plainly indicate that at one time the "selk" or common seal was an inhabitant of the waters of the lough.

The Geology of the islands was dealt with very fully in the Report, mention being made of the raised beaches at Chapel, Rough, and Reagh Islands. Particular attention was drawn to the question of "erratics." Lantern slides of the erratics near Sketrick showed that they contained cavities which looked like pot-holes, but were merely nodular cavities originally containing iron nodules. The erratics were unevenly distributed—for example, at Ringhaddy there were very few; the eastern islands showed a great variety among the erratics. The presence of Ailsa Craig eurite and Castle Espie limestone among the erratics was commented on and their bearing upon the general theory of the northern glacial ice-flow.

With regard to the antiquities of Strangford Lough, this part of the Sub-Committee's work was not very fully dealt with in the Report owing to the large extent of the ground to be covered. A hint was thrown out, which it is hoped will be acted upon in the near future, that the soil of Island Mahee should yield a rich harvest to the antiquarian investigator and excavator.

The sections of Zoology, Ornithology, and Entomology were lightly touched on, as these sections apparently require more workers in order to do them justice.

Coming to Botany there was evidence here that much good work had been done. The plants had three distinct zones or habitats:—(1) Submerged sea-grass meadows; (2) The open association of the Saltwort; (3) Strand plants, such as *Glyceria maritima* and the *Spergularias*. Chapel Island yielded 60 species; Rough Island 100 plants. The lists of plants showed the presence

of the Vernal Grass, Wild Celery, Pyramidal Orchid, and two of our rarer grasses, *Poa nemoralis* and *Lepturus filiformis*. Due account was also given of the mosses and seaweeds in the area under discussion.

The lecture was illustrated by lantern slides, including diagrams and photographs. Some fine maps were on view; also a collection of erratics, flowering plants, seaweeds, types of birds seen, snails, etc. Particular mention should be made of the block of Castle Espie limestone found by Mr. R. Bell *in situ*. Its surface had been finely polished by ice action and showed glacial striae running in two directions. The meeting terminated with some appreciative remarks from Dr. Charlesworth and Mr. Bennett.

THE BRONZE AGE IN ULSTER.

The second meeting of the Winter Session was held in the Museum on December 17th, when Mr. Charles Bulla gave an address entitled "The Bronze Age in Ulster." The President, Mr. Cleland, occupied the chair. Mr. Bulla prefaced his paper by saying that from the early days when Abraham sought to purchase ground for a burial place, down through the ages, the incidents connected with the interment of the remains of those who have been near and dear to us form a striking chapter in human interests.

In Ulster the burial customs of the preceding generations varied with the districts, and were slow to change, innovations being thought to be unacceptable to the deceased or their surviving friends. Mr. Bulla went on to say that the Book of Ballymote made some references to cremation. The ceremonies were elaborate in the period preceding the Iron Age; the funeral pyre, the rites, the possible feasts; then after cremation the placing of the calcined bones and charcoal in a clay urn, ornamented according to its place in the time calendar of the Bronze Age.

These items of pottery are the gems of the collector, and the lecture was well illustrated by examples, sketches, and drawings.

Urns nowadays are divided into classes according to shape, age, or position in the scale of time; so we have "Beakers," "Food Vessels," "Cinerary Urns," and lastly "Pygmy Urns"—the last class generally but two inches in height and width. Very few of these Pygmy Urns have been found in Ireland. Occasionally a beautifully decorated lid accompanied the urn. Ulster urns are of great variety and many are truly artistic. Until recently one of these "Urns" was an urn and little more, but through the labours of such as Lord Abercromby they are now taking a definite place in the graduated scale of time into which the Bronze Age is portioned out.

Not the least interesting part of the lecture was the criticism of the urns contained in the Belfast Municipal Museum, with Lord Abercromby's notes.

In the discussion which followed, Mr. Robert May drew attention to the fact that people expect to find gold in the urns, and this was the reason they were often destroyed. A whole cemetery of them was found near Moira some time ago, only a few of which were rescued. Miss Andrews commented on the fact that some of the pottery makers belonged to a "short" race. The meeting terminated with the election of Miss G. Smyth, Miss N. Roden, and Miss M'Kibben as associate members of the Club.

THE FENLAND OF EAST ANGLIA.

The third meeting of the Winter Session was held in the Museum, College Square North, on the 21st of January, the President, Mr. A. M'I. Cleland, occupying the chair. Professor R. H. Yapp, M.A., gave an address entitled "The Fenland of East Anglia and its Vegetation." The first part dealt with the general characteristics of the Fenland and the ancient industries carried on there.

In early historic times the Fenland was a great swampy plain; now it has been drained and yields excellent crops. There are still a few undrained spots, and the lecturer drew attention to one of these, viz. :—Wicken Fen, ten miles north of Cambridge. The vegetation of the fens is influenced by the character of the soil, which, unlike the Irish bogs, is not acid, but neutral, owing to the water supply coming from the chalk.

In places large tree trunks are exposed, the tops of most of which lie to the North-East; therefore we can conclude that the prevailing winds have not changed in direction since early times.

During the remainder of the paper Prof. Yapp dealt with the different types of plants inhabiting the fen—acquatic, semi-acquatic, and terrestrial. The method by which the plants of each group obtained their supplies of oxygen and resisted the effects of drying winds were dealt with in detail, with the aid of an excellent series of lantern slides.

During a short discussion that followed points were raised by the Chairman, Dr. Charlesworth, and Mr. Stelfox, to which Prof. Yapp briefly replied. The meeting terminated with the election of Mr. Strain (ordinary), Mr. M'Bride (associate), and Mr. Bent (junior) as members of the Club.

THE WARFARE OF ANIMALS.

The fourth meeting of the Winter Session was held in the Museum, College Square North, on Tuesday evening, 18th February. The President, Mr. A. M'I. Cleland, occupied the chair. Professor Carpenter, D.Sc., Royal College of Science, Dublin, dealt in an interesting manner with the "Warfare of Animals," saying that the Darwinian conception of the struggle for existence has long been well-nigh a commonplace among Naturalists and has captured the imagination of people generally. A certain school of philosophers laid hold of this doctrine as a justification for the biological necessity of war; but we must

remember that Darwin used the phrase in a large and metaphorical sense. Examples of weapons—teeth, pincers, poison-fangs—and of defensive armour of many kinds may be seen among animals ; but in the use of such weapons the animal is far more hunter than soldier. Among the many beautiful lantern slides with which the lecture was illustrated was one showing that even shells were not protection enough from enemies in some cases, the shell having been bored through by an enemy and the animal extracted. Defence by appearance, illustrated by the familiar yet always fascinating instances of protective coloration among butterflies and their caterpillars, suggests another aspect of the “warfare,” and introduces the importance of behaviour. Here we find instinct, care of eggs or young, nest-making, comradeship, of supreme importance, as shown by the elimination of the great armoured Dinosaurian reptiles of the Secondary Period of the earth’s history and the rise of birds and mammals to the forefront of the animal world. This may indeed show that the “Warfare of Animals” in the Darwinian sense is a real factor, working for perfection. Only in very few cases—such as in certain ants—do we find organized combats between armies of nearly allied species, resembling the warring of human nations and races.

At the conclusion Mr. Foster proposed, and Professor Yapp seconded, a hearty vote of thanks to Dr. Carpenter for his able address. Dr. Carpenter having replied, the meeting terminated with the election of Mr. W. J. Macknight as a junior member of the Club.

MEXICAN PYRAMIDS AND ANCIENT ARCHITECTURE.

The fifth meeting of the Winter Session was held in the Museum on March 18th, when Mr. D. E. Lowry gave a lecture entitled “Mexican Pyramids and Ancient Architecture.” The President, Mr. A. M’I. Cleland, occupied the chair. Mr. Lowry prefaced his paper by giving a resumé of the history of Mexico. He said that when Cortes reached the City of Mexico the Aztecs

were the rulers, but they had only been in possession 300 years. The earlier Toltec race were the builders of the Pyramids. In style and ornamentation these were similar to those of Egypt and quite as large, with their four sides to the points of the compass, but not built as huge mausoleums, being in all cases surmounted by a temple. The pyramid in reality forms the base of the temple. These builders were no savage tribe, but a race with thousands of years of culture behind it, with art, science, poetry, and architecture of a class similar to that of Africa or Asia.

There were several theories regarding the advent of an Eastern race in the extreme West. The most acceptable one is that which supposes they came by way of Ceylon, Java, Malay peninsula, and thence by various islands across the Pacific. The lecturer went on to say that the Mayan temple-builders were at the height of their activities about the 6th or 7th century of our era. Their characteristics are written in their architecture and preserved in the traditions of the later races that supplanted them. They were not warriors, but cultured and refined, with a high standard of morality and deeply religious. The great pyramids, terraced temples, and palaces are of fine proportions, elaborate decoration, and artistic design. The buildings and decorations are so similar to those in Ceylon and Java that it seems most improbable for both places so far apart to have developed, independently, architecture on similar lines. Therefore, the suggestion is that they had a common origin. Gradually, through contact with other tribes, the style of building and ornamentation altered, until after 800 or 1,000 years, in Aztec times, we should scarcely recognise the art of the earlier inhabitants. The greatest pyramid had a temple on its top dedicated to the Sun. This pyramid was scarcely inferior in size to that of the largest Egyptian one.

Up till Aztec times there is no history of human sacrifice, but with them the taking of human life seemed the only way to appease the gods, and so they introduced it to the country of their adoption, and all prisoners taken in war were sacrificed on

the great convex stones found on the top stories of the pyramid temples.

The beautiful lantern slides included the house of Cortes in Mexico City and types of architecture from the earliest times. The carvings and decorations showed that Bhuddist and Indo-Chinese influence was dominant. At a later period there came a change; the figures were upright and had feather head-dresses. There was thus a gradual change in the sculptures; from being calm and meditative they became warlike, and so in time could not be recognised as emanating from an eastern source. Mr. Lowry mentioned the great Aztec calendar stones—one weighing 25 tons being set in the wall of the Cathedral—also the frequent recurrence of the symbol of the “red hand.” In the discussion which followed Mr. Bennett wished to know if the pyramids had a natural core over which they were built, but the lecturer said this was not the case. Mr. May also took part, and some interesting points were raised as to whether the “red hand” was a right or a left one, this having some interest to the province of Ulster.

ADDITIONAL LECTURES.

In addition to the above, three lectures of more special interest were delivered on geological and zoological subjects. On December 3rd and January 7th Dr. J. K. Charlesworth dealt with the Glacial Epoch in Great Britain and Ireland; while on 1st April Mr. A. Milligan lectured on “Adaptation to Environment of Deep Sea Life.”

ANNUAL MEETING.

The fifty-sixth Annual Meeting was held in the Museum on 15th April, the chair being occupied by the President, Mr. A. M'I. Cleland.

A motion was brought forward on behalf of Mr. S. A. Bennett, who was unavoidably absent, and adopted by the meeting:—
“That the present Junior and Associate Sections be abolished

and a new Junior Section be formed, with age ranging from 12-21 years. No entrance fee, but an annual subscription of 1/- up to 18 years and 2/6 up to 21 years of age. Members not to receive copies of the Proceedings, but, if they care to, can attend ordinary meetings and excursions of the Club." The Annual Report was read by Dr. J. K. Charlesworth; the Librarian's Report by Mr. S. Wear; the Treasurer's Statement by Mr. S. M. Macoun, Report of the Associate Section by Miss M. W. Rea; the Report of the Junior Section by Miss S. Blackwood.

On the motion of Mr. Elliott, seconded by Mrs. Macoun, it was resolved that these reports be adopted, printed, and circulated as usual.

The election of Office-bearers for 1919-20 was then proceeded with. It was proposed by Mr. Boyd, and seconded by Mr. Pim, that Mr. A. M'I. Cleland be re-elected President. Further, that Mr. S. A. Bennett be re-elected Vice-President; Mr. Macoun be re-elected Treasurer; Mr. S. Wear re-elected Librarian; Mr. A. M'I. Cleland and Mr. J. A. S. Stendall be elected Secretaries. The Sectional Secretaries—Botanical, Mr. N. Carrothers; Geological, Dr. J. K. Charlesworth; Zoological, Mrs. Gibson; Archæological, Mr. R. May; and Junior, Miss S. Blackwood, were re-elected.

On the motion of Dr. Charlesworth, seconded by Miss M. W. Rea, Messrs. S. M. Macoun and S. Wear were appointed Scrutineers, and a ballot was taken to fill four vacancies in the Committee. On the report of the Scrutineers the President announced that the following had been elected:—Mr. W. C. Boyd, Prof. R. H. Yapp, Rev. W. R. Megaw, and Mr. S. C. Black.

Mr. Stendall, on behalf of the Club, then thanked the retiring Secretaries for their services during the past three years, to which Dr. Charlesworth suitably replied. Suggestions as to places to be visited on the Summer excursions were next made and referred to the Committee for consideration.

With the election of Mr. Kennedy as an ordinary member the proceedings terminated.

RULES

OF THE

Belfast Naturalists' Field Club.

As amended at General Meeting held 15th April, 1919.

I.

That the Society be called "THE BELFAST NATURALISTS' FIELD CLUB."

II.

That the object of this Society be the practical study of Natural Science and Archæology in Ireland.

III.

That the Club shall consist of Ordinary, Junior, Life, Corresponding and Honorary Members. The Ordinary Members shall be proposed and seconded at any meeting of the Club and elected by a majority of votes of the members present. They shall pay annually a subscription of Five Shillings. Members who are twelve months in arrear in their subscriptions shall not receive any further circulars or other printed matter.

That the composition fee for Life Membership be Four Guineas.

Junior Members, who must be between the ages of 12 and 21, shall be elected in the same way as Ordinary Members, but shall pay annually a subscription of One Shilling (1/-) from 12 years of age to 18, and a subscription of Two Shillings and Sixpence (2/6) from 18 years of age to 21. Junior Members shall not receive any printed matter except the usual notices; shall not have the power to vote; and shall not borrow books from the Club's Library without special permission from the Librarian. On attaining their majority they shall become Ordinary Members, and shall pay an annual subscription of Five Shillings (5/-).

IV.

That the Honorary and Corresponding Members shall consist of persons of eminence in Natural Science, or who shall have done some special service to the Club; and whose usual residence is not less than twenty miles from Belfast. That such Members may be nominated by any Member of the Club, and on being approved by the Committee, may be elected at any subsequent Meeting of the Club by a majority of the votes of the Members present. That Corresponding Members be expected to communicate a paper once within every two years.

V.

That the Officers of the Club be annually elected and consist of a President, Vice-President, Treasurer, Librarian, and one or two Secretaries, together with the Secretaries of the various Sections of the Club. That the office of President or that of Vice-President shall not be held by the same person for more than two years in succession.

VI.

That the General Committee shall consist of the above-named officers with nine ordinary members of Committee, and shall hold at least eight meetings during the year; five persons to form a quorum.

That three ordinary members of Committee shall retire annually in order of seniority, those retiring being ineligible for re-election for one year. Should any ordinary member of Committee fail to attend at least three of the Committee meetings held during the year his or her place may be considered vacant and another member elected to fill the position. No ordinary member of Committee shall hold the post of Secretary in any of the Sections. That in the event of a vacancy occurring in the General Committee a new member may be co-opted to fill such vacancy for the remainder of the year.

That nominations for ordinary members of Committee shall be sent in writing to the Secretaries on or before the 21st day of March in each year. That the privilege of nominating members of Committee shall be held by all Ordinary and Life Members of the Club. That the names of those members so nominated shall be published on the circular convening the Annual Meeting, at which the Ordinary Members of Committee shall be elected by ballot. That should the necessity arise the retiring members of Committee shall be balloted for.

VII.

The Committee may from year to year appoint Sectional Secretaries and Committees, as may be considered desirable, to further original investigations in any one or more departments of the Club's work. No financial responsibility to be incurred by any Sectional Secretary, Sectional Committee, or any Officer of the Club without the previous approval of the Club's Committee. The Junior Section to have a Committee composed of Six Members of the Club, the Chairman to be annually appointed by the General Committee.

VIII.

That the members of the Club shall hold at least Six Field Meetings during the year, in the most interesting localities, for investigating the Natural History and Archaeology of Ireland. That the place of meeting be fixed by the Committee, and that five days' notice of each Excursion be communicated to Members by the Secretaries. That each of the Sectional Secretaries shall be made responsible for the running of one Regular Excursion, the programme to provide study in the subject appertaining to the Section, and that any additional Special Excursions shall be arranged by the Secretaries of the Sections concerned.

IX.

That regular Monthly Meetings be held during the Winter Session from November till April, inclusive, for the purpose of reading Papers; such Papers as far as possible to be original, and to treat of the Natural History and Archæology of the district. That the Papers to be read be secured by a Standing Organising Committee, consisting of the Hon. Secs. of the Club, together with the Sectional Secretaries and a Chairman. That between the Regular Monthly Meetings of the Club Special Meetings open to all Members of the Club may be held, at which Papers of specialised interest would be discussed. That the Sectional Secretaries shall each be responsible for the providing of a programme for one Regular and one Special Meeting, one Regular and one Special Meeting to be arranged by the Hon. Secs. Any extra Meetings shall be arranged by the Organising Committee, if desired. That the programme for the Winter Session shall be completed by the date of its First Meeting and issued to all Members. That each notification announcing a Regular Meeting or Excursion shall also serve to notify Members of the next Special Meeting or Excursion.

X.

That the Committee shall, if they find it advisable, offer for competition Prizes for the best collections of scientific objects of the district; and the Committee may order the purchase of maps, or other scientific apparatus, and may carry on geological and archæological searches or excavations, if deemed advisable, provided that the entire amount expended under this rule does not exceed the sum of £10 in any one year.

That the General Committee may offer from time to time such prize or prizes as they may deem desirable for competition among Schools in or near Belfast.

XI.

That the Annual Meeting be held during the month of April, when the Report of the Committee for the past year, and the Treasurer's Financial Statement shall be presented, the Committee and Officers elected, Bye-laws made and altered, and any proposed alterations in the general laws, of which a fortnight's notice shall have been given, in writing, to the Secretary or Secretaries, considered and decided upon. The Secretaries to give the Members due notice of each intended alteration.

XII.

Members of other Irish Field Clubs, residing temporarily or permanently in or near Belfast, may be enrolled as Members of the Club without election or entrance fee on production of a voucher of membership of another Club, and without subscription for the current year, on production of a receipt showing that such subscription has been paid to another Club. Failing the production of such receipt, the usual subscription for the current year to be paid to the Treasurer on enrolment. The names of Members so admitted to the Club to be published with the notice of meeting following the date of their enrolment.

XIII.

That, on the written requisition of twenty-five Members, delivered to the Secretaries, an Extraordinary General Meeting may be called, to consider and decide upon the subject mentioned in such written requisition.

XIV.

That the Committee may be empowered to exchange publications and reports, and to extend the privilege of attending the Meetings and Excursions of the Belfast Naturalists' Field Club to Members of kindred societies, on similar privileges being accorded to its Members by such other societies.

RULES FOR THE CONDUCTING OF EXCURSIONS.

I. The excursion to be open to all Members, each one to have the privilege of introducing two friends. The time for commencing as many as possible of the Half-Day Summer Excursions to be not prior to 2 p.m.

II. A Chairman to be elected as at ordinary meetings.

III. One of the Secretaries to act as Conductor, or, in the absence of both, a Member to be elected for that purpose.

IV. No change to be made in the programme, or extra expense incurred, except by the consent of the majority of the Members present.

V. No fees, gratuities, or other expenses to be paid except through the Conductor.

VI. Every Member or Visitor to have the accommodation assigned by the Conductor. Where accommodation is limited, consideration will be given to priority of application.

VII. Accommodation cannot be promised unless tickets are obtained before the time mentioned in the special circular.

VIII. Those who attend an excursion without previous notice will be liable to extra charge, if extra cost is incurred thereby.

IX. No intoxicating liquors to be provided at the expense of the Club.

Report No. 66 (for 1917).

Manchester—Microscopical Society.

Transactions for 1917.

North Staffordshire—Field Club.

Transactions, Vol. LII. (1917-18).

Norwich—Prehistoric Society of East Anglia.

Proceedings, Vol. II., Part 4 (1917-18).

Nova Scotia—Institute of Science.

Proceedings and Transactions, Vol. XIV., Part 3.

Nottingham—Naturalists' Society.

Annual Reports for 1913 to 1918.

Oxfordshire—Ashmolean Natural History Society of—

Proceedings and Report for 1918.

Stavanger Museum.

Aarshefte for 1917.

Torquay—Natural History Society.

Journal, Vol. II., No. 4.

U.S.A.—Californian Academy of Science.

Proceedings, Vol. II., Part 1 (No. 11) ; Part 2 (No. 12).

Vol. VI. Nos. 8 and 9.

Vol. VII., Nos. 1 to 13.

Vol. VIII., Nos. 1, 3 and 4.

Title Page and Index for Vols. IV., V. and VI. of Series 4.

„ Chapel Hill N.C. — Elisha Mitchell Scientific Society.

Journal, Vol. XXXIII., No. 4.

„ Medford, Mass.—Tuft's College Studies.

Scientific Series, Vol. IV., No. 5.

„ Missouri Botanical Garden.

Bulletin, Vol. VI., Nos. 3 to 10 ; Vol. VII., Nos. 1 and 2.

„ New York Academy of Sciences.

Annals, Vol. XXVII., pp. 215-243.

„ Philadelphia Academy of Sciences.

Proceedings, Vol. LXIX., Parts 2 and 3 ; Vol. LXX., Parts 1 and 2.

„ Washington—Government Printing Works.

Smithsonian Reports, Nos. 2462 to 2466, 2475, 2476.

„ „ Miscellaneous Collections, Vol. LXVIII., No. 10
Museum Report for 1917.

„ Washington—U.S. Department of Agriculture.

Year Book for 1917.

List of Members.

Any change in the Address of Members should be at once notified to the Secretaries by Post Card.

The Dates prefixed to Members' names signify date of Election.

O stands for an Original Member who signed the requisition for the formation of the Club in 1863.

Hon. Members.

- 1877. Lapworth, Professor Charles, LL.D., F.R.S., The University, Birmingham.
- 1904. Plunkett, Thomas, M.R.I.A., Enniskillen.
- 1902. Scharff, Robert F., B.Sc., Ph.D., F.L.S., M.R.I.A., National Museum, Kildare Street, Dublin.

Corresponding Member.

- O Holden, J. S., M.D., Sudbury, Suffolk.

Life Members

- 1894. Ewart, Sir. W. Q., Bart., Glenmachan, Strandtown.
- 1903. Stelfox, A. W., A.R.I.B.A., M.R.I.A., Ballymagee, Bangor.
- 1893. Wilson, Alec G., J.P., M.R.I.A., Belvoir Park.

Ordinary Members.

- 1918. Adams, Miss A. M., Rosemount, Malone Road.
- 1907. Adams, Rev. W. A., B.A., Antrim.
- 1915. Aird, Hugh, 16 Fitzwilliam Avenue.
- 1917. Alderdice, Richard S., 12 Linenhall Street.
- 1866. Anderson, Sir Robert, Bart., J.P., Donegall Place.
- 1911. Anderson, Miss Sarah, 4 Church View, Holywood.
- 1882. Andrew, J. J., L.D.S., University Square.
- 1892. Andrews, Miss E., 12 College Gardens.
- 1912. Andrews, Miss E. L., Inla, Comber,
- 1911. Andrews, Miss M. A., 50 Eglantine Avenue.
- 1912. Andrews, Dr. Marion B., 17 University Square.
- 1913. Andrews, Michael C., 17 University Square.
- 1916. Armstrong, Miss Dorothy, Corlea, Somerton Road.

1916. Baillie, Robert, Ellerslie, Ravenhill Park.
 1907. Baillie, W. T., Marathon, Green Road, Knock.
 1901. Barrett, J. H., Farnham Road, Bangor.
 1915. Beattie, John Carson, Deaf and Dumb Institution, Lisburn Road.
 1905. Beck, Miss, 1 Derryvolgie Avenue.
 1913. Bell, D. M., 22 Cyprus Avenue.
 1896. Bell, E. George, Solitude, Lurgan.
 1893. Bell, Robert, 64 Newington Avenue.
 1917. Bell, Miss Janet M., Daisybank, Holywood.
 1909. Bennett, Edward, Forth River Mill.
 1908. Bennett, S. A., B.A., B.Sc., Campbell College.
 1884. Bigger, Francis J., M.R.I.A., Ardriagh, Antrim Road.
 1914. Bird, Miss, 18 Connaught Mansions, Prince of Wales Road, Battersea, S.W. 11.
 1916. Black, S. C., 15 College Gardens.
 1898. Blackwood, Miss S., 6 College Green.
 1893. Boyd, Miss, c/o. A. E. Large, Bank Chambers, Palmerston Road, Southsea.
 1894. Boyd, W. C., J.P., Hazelbank Villa, Ravenscroft Avenue.
 1916. Bradley, Miss L. I., Haypark House, Knock.
 1917. Bradley, Mrs., Haypark House, Knock.
 1883. Brandon, Hugh B., J.P., 2 Wellington Place.
 1863. Brett, Sir Charles H., Gretton Villa South.
 1883. Brown, Thomas, J.P., 102 Donegall Street.
 1911. Browne, G. B., 356 Ormeau Road.
 1876. Bulla, Charles, 272 Lisburn Road.
 1899. Burrows, W. B., Ballynafeigh House.
 1918. Byrne, Mrs., 24 College Square North.
-
1903. Campbell, D. C., J.P., M.B.O.U., Templemore Park, Londonderry.
 1909. Campbell, John, Albert Brickworks, Carrickfergus.
 1916. Campbell, John, 194 Antrim Road.
 1917. Campbell, James, Jennymount Mill, Belfast.
 1891. Capper, J. Malcolm, 14 Linenhall Street.
 1904. Carmody, Rev. Canon W. P., Lisburn.
 1892. Carrothers, Nathaniel, 145 Stranmillis Road.
 1892. Carson, J. C., 8 Wellington Place.
 1917. Carson, James, Parkmount, Lisburn.
 1914. Carter, C. S., 25 Donegall Street.
 1907. Chambers, W., 3 Custom House Square.
 1914. Charlesworth, John K., M.Sc., Ph.D., F.G.S., Queen's University.
 1901. Cheyne, H. H., Roseneath, Bangor.
 1894. Cleland, Alex. M'I., Macedon, Green Road, Knock.
 1894. Cleland, Mrs. Annie, Macedon, Green Road, Knock.
 1890. Cleland, James A., Bernagh West, Malone Park.
 1893. Cleland, W. W., Osborne House, Osborne Park.
 1917. Close, R. M., 13 Donegall Square North.
 1904. Cocking, Miss C. E., 19 Glebe Road, Huddersfield.

1914. Corrigan, Chas., 133 Royal Avenue.
 1906. Cowie, James, Midland Railway Co.
 1913. Cunningham, Miss M. E., Glencairn, Belfast.
 1884. Cunningham, Samuel, Fernhill.
 1915. Cunningham, Josias, M.B.O.U., Fernhill, Belfast.
1916. Davis, Miss E. C., Lauraville, Balmoral.
 1905. Dawson, R. A., A.R.C.A., Inniskeen, Holywood.
 1915. Denby, Miss Alice M., Evetide, Westland Gardens.
 1891. D'Evelyn, Alex. M., M.D., Ballymena.
 1915. Dick, Miss M. E., M.A., Wynstay, Rosetta Park.
 1891. Dickson, John M., 28 Wellington Park.
 O Donaldson, George, 1 Prospect Street.
 1907. Doran, John, J.P., Dunottar, Malone Road.
 1909. Drummond, Miss Ina, 39 Atlantic Avenue.
 1916. Duffin, Miss Mabel W., B.Sc., Rokeby, Deramore Park.
 1916. Dunbar, Rev. Kenneth, The Manse, Comber.
 1908. Duncan, William, 24 Queen Street.
 1912. Dundee, Miss B., Eglantine Avenue.
 1912. Dunlop, (the late) T. W., Scarva,
 1909. Dwerryhouse, Major A. R., D.Sc., F.G.S., M.R.I.A., Queen's University.
1916. Edwards, Herbert, 54 Ulsterville Avenue.
 1916. Edwards, Mrs., 54 Ulsterville Avenue.
 1884. Elliott, David, B.A., J.P., Ardree, Bloomfield.
 1912. Erskine, Mrs., Claremont, Holywood.
1868. Faren, W., 11 Mountcharles.
 1912. Ferguson, Mrs., St. Helen's, Holland Park, Knock.
 1913. Ferguson, Samuel, St. Helen's, Holland Park, Knock.
 1918. Fiddis, H., 20 Wilmont Terrace, Lisburn Road.
 1897. Finlay, Miss, St. Hilda's East, 3 Old Nichol Street, Bethnal Green, London.
 1906. Finlay, Arch. H., Willesden, Holywood.
 1899. Forth, (the late) Capt. Francis C., F.R.C.Sc.I., Technical Institute.
 1899. Foster, Nevin H., F.L.S., M.R.I.A., M.B.O.U., Hillsborough.
 1903. Foster, Mrs. N. H., Hillsborough.
 1911. Foster, Miss A. B., B.Sc., Y.W.C.A., William Street, Waterford.
 1892. Fulton, David, Arlington, Windsor Avenue.
 1916. Fulton, Miss D., Laurelbank, Woodvale Road.
1904. Gaffikin, William, J.P., Notting Hill.
 1891. Galloway, Joseph, 50 Eglantine Avenue.
 1892. Gamble, Miss, Lorne, Craigavad.
 1913. Gardner, Miss Nettie H., B.Sc., Hawthornden Road, Knock.

1916. Gibb, Miss C., 7 Claremont Street.
 1893. Gibson, Andrew, Lansdowne Road.
 1917. Gibson, Mrs., Berrington, Lansdowne Road.
 1911. Gibson, Mrs. Jos., Hillsborough.
 1905. Glover, James, Seaview, Kirkcubbin.
 1885. Godwin, William, Queen Street.
 1918. Gordon, Eustace, 35 Rosemary Street.
 1918. Gourlay, Mrs. J., 18 Willowbank Street.
 1892. Green, Mrs. Isaac, Hawthornden, Knock.
 1895. Green, Wm. A., 4 Salisbury Terrace, Chichester Park.
 1912. Greenfield, Mrs. T. K., 8 High Street, Holywood.
 1901. Greeves, J. Theodore, Nendrum, Knockdene Park.
 1901. Greeves, W. Leopold, Ormeau Avenue.
 1901. Greeves, Fergus M., Rydal Mount, Knock.
 1918. Greeves, Owen, Tavanagh House, Portadown.
-
1908. Hadden, Mrs., Magharee, Portadown.
 1907. Hadden, Dr. Robert E., Ardralla, Portadown.
 1918. Hagan, Miss I. M., Rathcowle, Jordonstown.
 1883. Hamilton, Rev. T., D.D., LL.D., Vice-Chancellor, Queen's University.
 1908. Hamilton, Miss, 5 Church Avenue, Holywood.
 1877. Hamilton, John, 5 Church Avenue, Holywood.
 1916. Harper, V. M., B.A., Campbell College.
 1915. Hawthorne, Rev. Samuel, B.A., Helen's Bay.
 1916. Hawthorne, Miss, Helen's Bay.
 1908. Henry, F. W., Ye Olde Castle, Castle Place.
 1915. Herdman, Miss E. W., Fountainville, University Road.
 1876. Heron, F. A., Cultra, Holywood,
 1905. Hobson, Mrs., Marino.
 1895. Hogg, A. R., 13 Trinity Street.
 1908. Hogg, D. J., 16 Kansas Avenue.
 1903. Holland, Miss, Cadogan Park.
 1904. Holland, Frank, Osborne Gardens.
 1906. Hopkirk, F. G., Midland Railway Co.
 1911. Houston, Miss, Lisheen, Sans Souci Park.
 1914. Houston, James Dick, Northern Bank, Lurgan.
 1913. Humphreys, Miss Norah, Lynford, Osborne Park.
 1915. Hunter, Miss K., Waterford Terrace, Coleraine.
-
1892. Jaffé, Lady, Kinedar, Strandtown.
 1909. Jenkins, W. A., 6 Elmwood Terrace.
 1914. Jenkinson, Hy., 29 Rosemary Street.
 1901. Johnson, Rev. W. F., M.A., F.E.S., M.R.I.A., Acton Glebe, Poyntzpass.
 1906. Johnston, F. W., The Cottage, Cultra.
 1916. Johnston, Miss M. B., Beechville, Glenburn Park.
 1916. Johnstone, Mrs., Riverside, Holywood.

1916. Kay, Miss M. P., B.Sc., Burnside, Bangor.
 1917. Keiller, W., 11 Chichester Street.
 1918. Kennedy, D., Pembroke, Wandsworth Road, Knock.
 1919. Kennedy, R. M., 16 Green Road, Knock.
 1899. Killen, William, 20 Waring Street.
 1886. Kirkpatrick F., 27 Oxford Street.
 1915. Kirkpatrick, W. H., Marlborough Park S.
 1868. Knowles, W. J., M.R.I.A., Flixton Place S., Ballymena.
 1877. Kyle, R. A., 15 Wellington Park.
-
1916. Lacy, Edwin, 46 Victoria Gardens, Chichester Park.
 1901. Larmor, H. G., J.P., Lisburn.
 1915. Lawrie, Thomas, East Bridge Street.
 1916. Lawther, Miss M. J. V., Marathon, Antrim Road.
 1915. Leathem, Miss M., 4 Gordon Terrace, Agincourt Avenue.
 1912. Ledgerwood, N. J., J.P., 10 Wellington Park.
 1916. Lees, Miss S. L., Drumadoon, Castle Park.
 1877. Lett, Rev. Canon H. W., M.A., M.R.I.A., Aghaderg Glebe, Loughbrickland.
 1918. Lewis, Mrs. A. J., 2 Ranfurly Drive.
 1918. Lindsay, Eric, Barbaraville, Annadale.
 1899. Lindsay, Professor, M.D., 3 Queen's Elms.
 1915. Lindsay, Mrs., Barbaraville, Annadale.
 1893. Lowry, D. E., 25 Donegall Place.
 1908. Lowry, James, Llewellyn Avenue, Lisburn.
 1918. Lowry, Miss, Hazelwood. Bloomfield.
 1910. Lowry, Miss L., Hazelwood, Bloomfield.
 1917. Lyttle, James, 1 Olney Terrace, Ballygomartin Road.
-
1915. MacCarthy, Mrs., Freshford, Knock.
 1905. MacCleary, A., Kensington Hotel, College Square East.
 1917. MacDevitt, H., 115 High Street, Holywood.
 1903. MacIlwaine, Capt., J.E., M.D., 26 College Gardens.
 1917. Mackintosh, Donald T., 59 Malone Avenue.
 1914. MacLaine, Lachlan, Rathaline, Annadale Avenue.
 1915. Maconachie, Rev. D. H., B.A., B.D., The Manse, Holywood.
 1915. Maconachie, Mrs., Brooklands, Holywood.
 1905. Macoun, Mrs., Clanrolla, Windsor Park.
 1912. Macoun, Stephenson M., Clanrolla, Windsor Park.
 1901. MacRea, Kenneth, Balmoral.
 1876. Major, Rev. J. J., Doagh.
 1905. Malcoln, Miss Susan, Downshire Road, Holywood.
 1899. Malcomson, J. G. B., Cairnburn, Strandtown.
 1901. Malcomson, Herbert T., M.B.O.U., 32 Arthur Street.
 1901. Malcomson, Joseph, 32 Arthur Street.
 1914. Manning, J. W., Slieve Donard Hotel, Newcastle.
 1880. Marsh, Mrs., Glenlyon, Holywood.

1891. Marshall, H. C., Bryansburn Road, Bangor.
 1916. Masterson, Miss, 93 Wellesley Avenue.
 1915. Mawdsley, Miss, Macedon, Green Road, Knock.
 1892. Maxton, James, Ulster Street.
 1908. Maxwell, Henry, Dunalbine, Deramore Park.
 1893. May, Robert, 40 Hopefield Avenue.
 1903. Mayne, H. Horner, 24 Elmwood Avenue.
 1917. Megaw, Rev. W. R., B.A., 55 Botanic Avenue.
 1918. Merrifield, Jas., 105 The Mount.
 1918. Metcalfe, A. W., Hawthornden Road, Knock.
 1906. Millar, Thomas O., 306 Antrim Road.
 1907. Milligan, Miss, Lisnamaul, Ormeau Road.
 1915. Milligan, Arthur G., The Grange, Annadale.
 1901. Milne, (the late) J. N., Westbank, Partickhill Road, Glasgow.
 1898. Montgomery, H. C., 40 Rosemary Street.
 1913. Montgomery, Miss E. S., 26 College Green.
 1911. Montgomery, Miss Jane E., 8 Sandhurst Road.
 1916. Moore, Frank, F.E.I.S., Home-Lyn, Marlborough Park N.
 1917. Morrison, Rev. Robert, B.A., The Curateage, Hillsborough.
 1892. Munce, W. B., Rosemary Street.
1899. M'Bretney, W. A. J., 31 Haypark Avenue.
 1909. M'Cance, James, 2 Easton Terrace.
 1913. M'Cance, Stoupe, 3 Markham Square, London, S.W.
 1884. M'Cleery, H., 20 Franklin Street.
 1912. M'Clelland, E. W., B.Sc., 79 Kansas Avenue.
 1879. M'Connell, James, J.P., Stranmillis House.
 1903. M'Connell, Miss, Stranmillis House.
 1905. M'Crum, Mrs., Ballyvesey, Carnmoney.
 1913. M'Dowell, Miss, 7 Lower Crescent.
 1918. M'Dowell, R., Frontinac, Ravenhill Park.
 1914. M'Kay, Miss E. W., B.Sc., Ardbana Terrace, Coleraine.
 1904. M'Kean, Edward John, B.A., B.L., Rosaville, Fortwilliam Park.
 1906. M'Kinney, Miss, Sentry Hill, Carnmoney.
 1917. M'Iloy, R., 32 Pandora Street.
 1912. M'Meekin, Miss A. M., Sunnyside, Carnmoney.
 1917. M'Meekin, Adam, Cogry House, Doagh.
 O M'Millan, W., J.P., 30 Ashley Avenue.
1898. Orr, James, 17 Garfield Street.
- O Patterson, D. C., Glenard, Holywood.
 1888. Patterson, Robert, F.L.S., M.R.I.A., M.B.O.U., Glenbank, Holywood.
 O Phillips, Wm. H., Lemonfield, Holywood.
 1867. Pim, John, J.P., Bonaven, Antrim Road.
 1868. Pim, Thomas W., 21 Victoria Street.

1869. Pim, Joshua, 6 Donegall Square South.
 1903. Pim, W. R., Lisnagarvey, Lisburn.
 1903. Pooler, Rev. Chas. K., B.D., M.R.I.A., Strangford.
 1890. Porter, F. A., Queen's Square.
 1890. Porter, William, Beechview, Balnoral Avenue.
 1883. Praeger, R. Ll., B.A., B.E., M.R.I.A., National Library, Kildare Street, Dublin.
1901. Rankin, Will, Gordonall, Myrtlefield Park.
 1904. Rankin, Mrs., Gordonall, Myrtlefield Park.
 1907. Rea, Miss M. W., Salem House, Sydenham.
 1916. Rea, Miss L. C., Salem House, Sydenham.
 1907. Riddel, Mrs., Donegall Park Avenue.
 1913. Ritchie, Miss Frances, B.Sc., Anaghlonge, Banbridge.
 1903. Robb, H. M., 44 Ulsterville Avenue.
 1909. Russell, Nelson, Lisburn.
 1916. Rutledge, Miss Ethel J., M.Sc., 92 North Parade.
 1911. Ryves, Miss, 65 Wellington Avenue.
1899. Sandes, Robert, Chorlton, Adelaide Park.
 1913. Savage, W. E. J., Lincoln Avenue.
 1917. Sayers, Miss, B.A., Bartragh, Knock.
 1903. Sefton, Burton, St. Aubyn's, Deramore Drive.
 1918. Seymour, J., Inchmarlo, Marlborough Park.
 1911. Shaw, G. W., Ulster Bank, York Street.
 1905. Sheils, Rev. John F., Saintfield.
 1916. Silcock, Miss E. A., B.Sc., Railway Street, Lisburn.
 1890. Skillen, Joseph, Largymore, Lisburn.
 1918. Slane, Miss U., Queen's University.
 1868. Speers, Adam, J.P., B.Sc., Holywood.
 1893. Stears, Samuel M., 6 Rosetta Avenue.
 1893. Steele, Miss, Dooneen, Marlborough Park.
 1910. Stelfox, Mrs. A. W., B.Sc., A.R.C.Sc.L., Ballymagee, Bangor.
 1911. Stendall, J. A. Sidney, Municipal Museum.
 1904. Stephens, John Kyle, J.P., 13 Donegall Square North.
 1894. Stewart, W. J., Ormeau Road.
 1916. Stewart, Miss L. K., B.Sc., Boghill, Coleraine.
 1909. Stokes, W. J., Malone Park.
 1919. Strain, W., Windsor Park.
 1866. Swanston, William, F.G.S., Farm Hill, Dunmurry.
1871. Todd, John, J.P., Clarinda, Fortwilliam Park.
 1901. Tomlinson, W. J. C., 17 Glandore Gardens.
 1875. Traill, W. A., M.A. Ing., Bushmills.
 1904. Turtle, William Haydock, 1 Holyrood, Malone Road.
 1909. Turtle, Mrs. Herbert, Rosemount, Knock.

1879. Waddell, Rev. C. H., M.A., B.D., M.R.I.A., The Rectory,
Greyabbey.
1894. Walsh, Robert, Ashestiel, Malone Road.
1893. Walker, W. J. D., C.B., The Sycamores, Drogheda.
1917. Walker, Franklin M., Wynard, Helen's Bay.
1893. Walkington, (the late) Miss, LL.D., Strandtown.
1911. Ward, Miss K., Albertville, Sydenham.
1909. Watson, John G., The Maples, King's Road, Knock.
1905. Wear, Sylvanus, 19 Hopefield Avenue.
1880. Welch, Robert J., M.R.I.A., 49 Lonsdale Street.
1877. Whitla, Sir William, M.D., College Square North.
1917. Williamson, James, J.P., Sandown Park, Knock.
1893. Wilson, George, 9 Bedford Street.
1901. Wilson, Prof. Gregg, M.A., D.Sc., M.R.I.A., Queen's University.
1904. Wilson, Mrs., Deramore Park.
1893. Woolcombe, Robt. Lloyd, M.A., LL.D. (Dublin University), F.I.
Inst., F.R.C.Inst., F.R.G.S., F.R.E.S., F.S.S., M.R.I.A., 14
Waterloo Road, Dublin.
- O Workman, Rev. R., M.A., Crusheen, Cadogan Park.
1901. Workman, W. H., F.Z.S., M.B.O.U., Lismore, Windsor Avenue.
1867. Wright, Joseph, F.G.S., 10 May Street.
1914. Yapp, Prof. R. H., M.A., Queen's University.

Associate Members.

1915. Armstrong, Edward, Corlea, Somerton Road.
1917. Baker, Arthur, Trevara, Knock.
1914. Ferguson, Miss Olive, Glenfield Place, Ormeau Road.
1916. George, Alfred H., 22 Thorndale Avenue.
1917. Greeves, J. R. H., Wyncroft, Donaghadee.
1915. Mussen, Robert Walsh, Hillhall,
Princetown Road, Bangor.
1919. M'Bride, A., Ballinabough, Templepatrick.
1919. M'Kibben, Miss, Louisville, Knockdene Park.
1919. Roden, Miss N. N., Riddel Hall, Stranmillis.
1916. Shaw, Miss Winnie, Grotli, Salisbury Gardens.
1919. Smyth, Miss G., Fernhurst, Knockdene Park.

Junior Members.

1916. Bell, Miss Emma, Cressington, Rosetta Park.
 1918. Bent, H. L., Lochlee, Kensington Road, Knock.
1916. Dawson, Brian, Baythorpe, Holywood.
 1916. Deane, Archibald, Mount Nephin, Knockbreda.
 1912. Deane, John, Mount Nephin, Knockbreda.
 1913. Deane, Lindsay, Mount Nephin, Knockbreda.
1917. Ferguson, Miss Noreen, Glenfield Place, Ormeau Road.
1916. Gilmour, Humphrey, Knocknarea, Kensington Road.
 1916. Gourlay, Jack, 18 Willowbank Street.
 1917. Grainger, Charles, Craigavad.
1918. Harris, Norman, 109 Fitzroy Avenue.
1918. Macknight, John, 220 Springfield Road.
 1915. Mayne, Miss Betty, 24 Elmwood Avenue.
 1916. Morton, Walter E., 65 Ulsterville Avenue.
1918. M'Carthy, Miss Daisy, 4 Ardlee Terrace, Holywood.
 1918. M'Carthy, Desmond, 4 Ardlee Terrace, Holywood.
1918. Quick, Geoffrey G., 17 Rossmore Avenue.
 1918. Quick, Kenneth J., 17 Rossmore Avenue.
1916. Sloan, Miss Kathleen, Anneville, North Road.
 1915. Stephenson, Miss Kathleen, 2 College Park East.
1915. Twadell, Miss Amy, Nashville, Malone Park.
1916. Young, Miss Carrie, Moyrusk, Marlborough Park.

PRESENTED

29 AUG. 1919



BELFAST NATURALISTS' FIELD CLUB.

FIFTY-SEVENTH YEAR, 1919-20

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DR. J. K. CHARLESWORTH, F.G.S., M.R.I.A.

Hon. Sec. Zoological Section:

MRS. GIBSON, BONNINGTON, LANSDOWNE ROAD.

Hon. Sec. Archæological Section:

ROBERT MAY, 40, HOPEFIELD AVENUE, BELFAST.

Hon. Sec. Junior Section:

MISS S. BLACKWOOD, 6, COLLEGE GREEN, BELFAST.

Ordinary Members of Committee.

Retire 1920.

W. B. Burrowes.

Major A. R. Dwerryhouse,
D.Sc., F.G.S., M.R.I.A.

Fergus M. Greeves.

Retire 1921.

Miss E. L. Andrews.

Robert Bell.

Rev. K. Dunbar.

Retire 1922.

W. C. Boyd.

Rev. W. R. Megaw.

Prof. R. H. Yapp,
M.A.

Junior Section Committee.

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MISS O. FERGUSON.

J. H. GILMOUR.

J. GOURLAY.

J. R. H. GREEVES.

MISS S. BLACKWOOD,

Hon. Sec. of the Section,
6, College Green,
Belfast.

Reduced Prices of Proceedings.

In accordance with resolution passed at General Meeting held on 28th April, 1911, the following reductions have been made in the prices of the Proceedings, &c., to Members of the Club. When the stock has been sufficiently reduced prices will be raised again.

Proceedings, without Appendices, Series II., Vol. I. (1873-74 to 1879-80) to 2/6 per vol.

„ „ „ „ „ II. (1881-82 to 1836-87) to 2/6 „

III. (1887-88 to 1892-93) to 2/6

IV. (1893-94 to 1900-01) to 2/6

" " " " " V. (1901-02 to 1906-07) to 2/6 "

The prices quoted above are for complete volumes, but any separate part may be had for 6d.

Appendices, Vol. I,	In Leather Binding	to 5/- per vol.
" " I,	In Paper Binding	to 3/6 "

Separate Appendices, which in covers are priced 6d and 1s, may be had in loose sheets at 1d and 2d per copy respectively. (This does not apply to Nos. 4, and 7 and 8 of Vol. II., of which we have no surplus stock.)

Flora of North-East Ireland, by Stewart and Corry, with Supplement. 2/6 per vol.

The following Publications of the Club can be had from the Librarian.

Eighth Annual Report—1870-71, containing Appendix II., List of Irish Liassic Foraminifera—Wright; and List of the Fossils of the Estuarine Clays of Antrim and Down—Stewart	2/6
Ninth Annual Report—1871-72	1/-
Tenth do. 1872-73	1/-
Proceedings, Series II., Vol. I., Part I., 1873-74, containing Appendix III., List of Mosses of North-East of Ireland—Stewart; and List of Cretaceous Microzoa of North of Ireland—Wright, 2 Plates	2/6
„ Series II., Vol. I., Part II., 1874-75	1/-
„ „ „ III., 1875-76	1/-
„ „ „ IV., 1876-77, containing Appendix IV., Recent Foraminifera of Down and Antrim—Wright, 1 Plate; and Silurian Rocks of Co. Down—Swanston and Lapworth, 3 Plates	2/6
„ Series II., Vol. I., Parts V. and VI., 1877-78 and '78 '79 (in one)	1/-
„ „ „ Part VII., 1879-80, containing Appendix V., List of Post-Tertiary Foraminifera of North-East of Ireland—Wright; and List of Mollusca of Boulder-Clay of North-East of Ireland—Stewart	2/-
„ Series II., Vol. II., Part I., 1880-81, containing Appendix VI., List of Foraminifera of South Donegal—Wright; Sponge Remains from Carb. Limestone, County Sligo—Wright; and Fossil Sponge-spicules, County Sligo—Carter, 1 Plate	1/6
„ Series II., Vol. II., Part II., 1881-82	1/-
„ „ „ III., 1882-83, containing Appendix VII., Supplemental List of Mosses of the North-East of Ireland—Stewart	1/-
„ Series II., Vol. II., Part IV., 1883-84, containing Appendix VIII., Notes on Irish Coleoptera—Halliday; Cromlechs of Antrim and Down—Gray, 12 Plates; and Pre-historic Monuments near Sligo—Elcock, 4 Plates	3/-
„ Series II., Vol. II., Part V., 1884-85, containing Appendix IX., Ostracoda of Belfast Lough—Malcomson; Fungi of North of Ireland—Lett; Foraminifera of “Protector” Cruise, &c.—Wright; Cretaceous Foraminifera of Keady Hill—Wright; Irish Coleoptera—Patterson	3/-
„ Series II., Vol. II., Part VI., 1885-86, containing Appendix X., The Ferns of Ulster—Phillips and Praeger	2/-
„ Series II., Vol. II., Part VII., 1886-87, containing Appendix XI., Notes on the Sections exposed at the Alexandra Dock, Belfast, with List of Fossils, 1 Plate—Praeger	2/-
„ Series II. Vol. III., Part I., 1887-88, containing Appendix XII., Marine Shells of the North of Ireland—Praeger	2/6
„ Series II., Vol. III., Part II., 1888-89	1/-
„ „ „ III., 1889-90, containing Report of Larne Gravels	2/-
Committee, 2 Plates	2/-
„ Series II., Vol. III., Part IV., 1890-91	1/-
„ „ „ V., 1891-92	1/-
„ „ „ VI., 1892-93	2/-
Index	6d
„ Series II., Vol. IV., Part I., 1893-94, containing Appendix XIII.	2/-
„ „ „ II., 1894-95, „ „ XIV.	2/-
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„ „ „ Vol. V., Parts I. and II., 1901-02, 1902-03 (in one)	2/-
„ „ „ Part III., 1903-04	1/-
„ „ „ IV., 1904-05	1/-
„ „ „ V., 1905-06, with Appendices XVI. and XVII.	2/-
„ „ „ VI., 1906-07, with Index	1/6
„ „ „ Vol. VI., Part I., 1907-08	1/6
„ „ „ II., 1908-09	1/6
„ „ „ III., 1909-10	1/6
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„ „ „ V., 1911-12	1/-
„ „ „ VI., 1912-13, with Title Page and Index to Vol. VI.	2/-
„ „ „ Vol. VII., Part I., 1913-14, with Report of 50th Anniversary	2/-
„ „ „ II., 1914-15	1/6
„ „ „ III., 1915-16	1/6
„ „ „ IV., 1916-17	1/6
„ „ „ V., 1917-18, with Title Page and Index to Vol. VII., and Appendix III. of Vol. III.	2/-
„ „ „ Vol. VIII., Part I., 1918-19	2/-

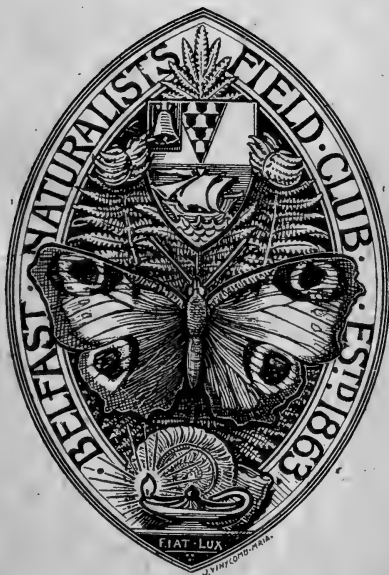
Some of the above are now available to members at reduced prices.

ANNUAL REPORT

... AND ...

PROCEEDINGS.

SERIES II.
VOLUME VIII.



Part II.
1919-20.

For Contents See Back of Cover.



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ANNUAL REPORT AND PROCEEDINGS
OF THE
BELFAST NATURALISTS'
FIELD CLUB,

FOR THE YEAR ENDING 31st MARCH, 1920.

(FIFTY-SEVENTH YEAR.)

SERIES II.
VOLUME VIII.



PART II.
1919-20.

Joint Editors:
S. A. BENNETT, B.A., B.Sc.
A. M'I. CLELAND.

Belfast:
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1920.



BELFAST NATURALISTS' FIELD CLUB.

FIFTY-SEVENTH YEAR, 1919-20.

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Hon. Sec. Geological Section :

DR. J. K. CHARLESWORTH, F.G.S., M.R.I.A.

Hon. Sec. Zoological Section :

MRS. GIBSON.

Hon. Sec. Archæological Section :

ROBERT MAY.

Hon. Sec. Junior Section :

MISS S. BLACKWOOD.

Ordinary Members of Committee :

Retire 1920.

W. B. Burrowes.

Major A. R. Dwerryhouse,
D.Sc., F.G.S., M.R.I.A.

Fergus M. Greeves.

Retire 1921.

Miss E. L. Andrews.

Robert Bell.

W. Porter.

Retire 1922.

W. C. Boyd.

Rev. W. R. Megaw

Prof. R. H. Yapp
M.A.

Junior Section Committee :

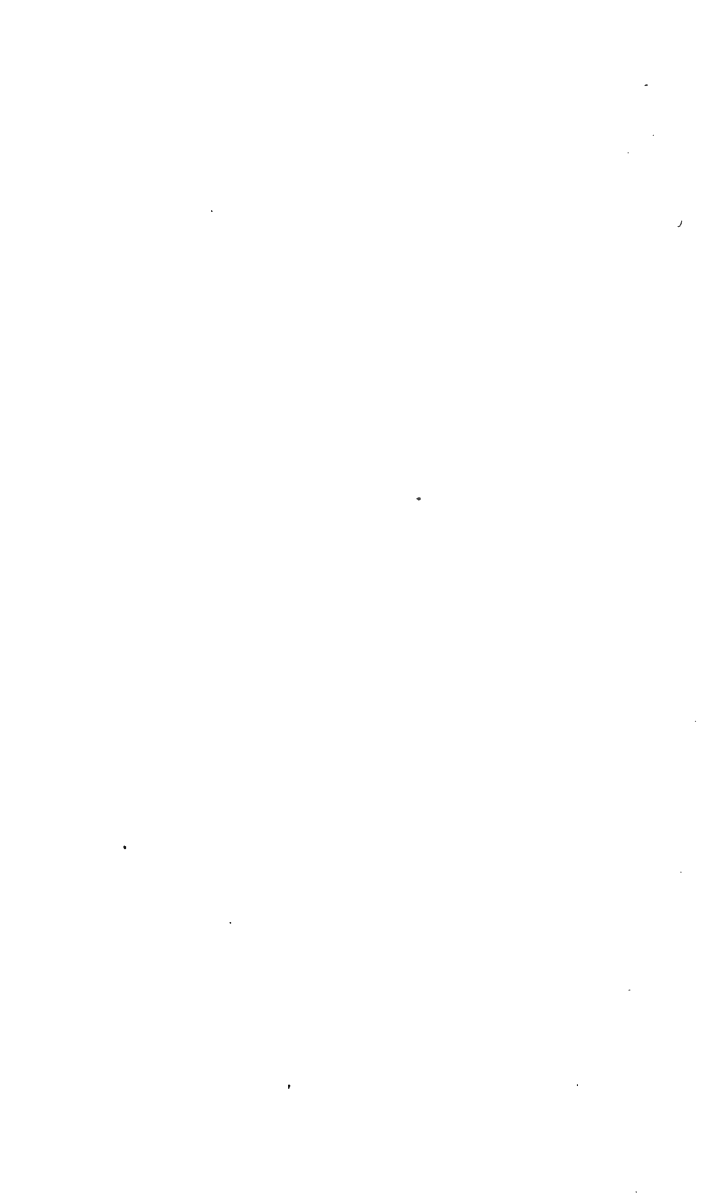
S. A. BENNETT, B.A., B.Sc., *Chairman.*

MISS O. FERGUSON.

J. H. GILMOUR.

J. GOURLAY.

J. R. H. GREEVES.



Annual Report.

YOUR COMMITTEE has pleasure in submitting the Fifty-seventh Annual Report, as follows:—

During the year 14 Ordinary, and 2 Junior Members have been elected; 19 have resigned and 10 have died. The total membership on the 31st March, 1920, is therefore 302 as against 315 recorded in the last report, a decrease of 13 members. The composition of the membership is now:—1 Honorary, 2 Corresponding, 2 Life, 290 Ordinary, and 7 Junior.

Your Committee greatly regret the decease during the year of 2 Honorary; 1 Life; 6 Ordinary; and 1 Junior Member. A list of their names will be found at the end of the report.

Eleven Committee meetings have been held during the year, at which the attendances were as follows:—

A. M'I. Cleland	...	11	Dr. J. K. Charlesworth	...	0
Mrs. Gibson	...	5	Fergus M. Greeves	...	0
Miss E. L. Andrews	...	2	S. M. Macoun	...	10
Miss S. Blackwood	...	9	Robt. May	...	7
S. A. Bennett	...	8	S. Wear	...	6
W. C. Boyd	...	8	S. C. Black	...	1
Robert Bell	...	7	Rev. W. R. Megaw	...	6
W. B. Burrowes	...	3	Prof. R. H. Yapp	...	0
N. Carrothers	...	2	J. A. S. Stendall	...	10
Dr. A. R. Derryhouse	...	3	Wm. Porter	...	4

Mr. S. C. Black resigned from the Committee after the first meeting and Mr. Wm. Porter was co-opted.

The programme of Summer Excursions was carried out in its entirety, except that the projected half-day excursion to Glenavy and Lough Neagh arranged for 2nd August, had to be abandoned owing to lack of railway facilities.

The places visited and numbers present were as follows:—

Broadwater	..	17th May	...	25	Present.
The Flush	...	31st May	...	56	„
Island Mahee	...	14th June	...	33	„
Carngaver	...	28th June	...	20	„
St. John's Point		26th July	...	17	„
Glencoe	... ..	16th August	...	16	„
Hillsborough	...	30th August	...	30	„

A very successful *Conversazione* was held in the Carlton Hall, on 21st October, 1919, at which the exhibits were, as usual, most interesting and varied, amply illustrating the fact that the Club, despite its advanced years, is still in a flourishing condition.

During the Winter Session the following papers were read, of which abstracts will be found in the Proceedings:—

1919.

November 18th—"Fiat Lux: as applied to Field Club Work," A. M'L. Cleland.

December 2nd—"The Ecology of the Lower Plants," late Rev. C. H. Waddell, M.A., B.D., M.R.I.A.

December 16th—"Some Aspects of Plant Life," R. Ll. Praeger, B.A., B.E. M.R.I.A.

1920.

January 6th—"Bye-gone Punishments," J. A. S. Stendall.

January 20th—"Hunting for the Living Bird of Paradise in British New Guinea," C. B. Horsbrough.

February 3rd—"Place Names of Strangford Lough Area," J. R. H. Greeves.

February 17th—"Salt Industries of the World," G. C. Reilly.

March 2nd—"Our Local Roses," S. A. Bennett, B.A., B.Sc.

March 16th—"Birds: Their Habits, Haunts, and Homes," D. C. Campbell, J.P., M.B.O.U.

The Hon. Treasurer will lay before you his Statement of Accounts, which shows a balance in hand of £9 1s 1d.

In these days of high prices, your Committee have endeavoured to cut down costs to a minimum, without seriously endangering the functions of the Club, and it is largely due to the indefatigable efforts of the Hon. Treasurer that so favourable a balance sheet can be produced. Your Committee, however, after effecting all economies it deems practicable, still find considerable difficulty in working, and unless the economic situation alters in favour of reduced prices in the near future, which seems highly improbable, it will be necessary to consider an increase in the Annual

Subscription, which stands the same to-day as it did in pre-war days.

The report of the Hon. Librarian will also be presented.

In conclusion, your Committee desire to tender their thanks to:—Mr. Wm. Best, Mr. J. L. Douie, and Rev. W. Wetherall, of Moira; Mr. R. Ardill, Island Mahee; Mr. D. E. Lowry, of Ringneill, and Lord Arthur Hill, of Hillsborough, for their kindness extended to members of the Club on the Summer Excursions; to the Press for publishing reports of the Excursions and Meetings; to the Superintendents of the Railway Companies; and to the Kindred Societies and Public Institutions who have favoured us with their publications.

J. A. SIDNEY STENDALL, } *Hon. Secs.*
A M'L. CLELAND, }

Librarian's Report.

During the war certain American Exchanges have been somewhat curtailed, but the deficiencies are now being gradually made up.

In answer to a request from the Director, a nearly complete set of our Proceedings has been sent the National Museum of Wales, Cardiff.

SYLVANUS WEAR, *Librarian.*

Deceased Members.

Mr. W. W. Cleland.
Sir W. Q. Ewart, Bart.
Captain F. C. Forth, F.R.C.Sc.I.
Mr. Humphrey Gilmour.
Dr. Robert E. Hadden.
Prof. Charles Lapworth, LL.D., F.R.S.
Mr. W. B. Munce.
Mr. Thomas Plunkett, M.R.I.A.
Mr. Adam Speers, J.P., B.Sc.
Rev. C. H. Waddell, M.A., B.D., M.R.I.A.

Dr. **Treasurer's Account for the Year ending 31st March, 1920.** **Cr.**

RECEIPTS.		PAYMENTS.	
To Balance	£9 12 1	By Printing Annual Report, 1018-19	£21 16 19
" Subscriptions (271 O., 10 A.)	69 0 0	" Postages for Proceedings, &c.	2 3 11
" Balance from Excursions	2 14 7	" New Minute Book	1 6 0
Do. Conversation	1 1 6	" Printing, Stationery, &c.	18 7 6
" Received for Prizes—Rev. W. R. Megaw	10/-	" Hire of Rooms for Meetings	6 19 6
Do. Mr. S. A. Bennett	5/-	" Hire of Lantern for Meetings	5 8 0
" Sale of Florus, &c.	—	" Addressing and Postage of Envelopes for Meetings	5 13 5
	...	do. do. Excursions	5 9 7
	...	" Other Postages	2 13 4
	...	" Fire Insurance	0 10 0
	...	" <i>Irish Naturalist</i>	2 0 0
	...	" Gratuities	1 0 0
	...	" Collector's Fee	0 17 0
	...	" Prize Money to Junior Section	0 15 0
	...	" Balance carried forward	9 1 1
	£84 0 8		£84 0 8

War Saving Certificates for £62 and £25 towards publishing a new "Flora of the North-East."

S. M. MACCOUN, *Hon. Treasurer.*

Examined and found correct by us.

W. C. BOYD, } *Hon. Auditors.*
SYLVANUS WEAR, }

Proceedings.

SUMMER SESSION.

THE BROADWATER AND MOIRA.

The first excursion of the Summer Session (under the conductorship of Mr. S. A. Bennett), was held on 17th May, when a party of 25 members journeyed to Moira by the 12-55 p.m. train, their objectives being the Lagan Canal and the Broadwater, the day being favoured by magnificent weather.

The most striking botanical objects met with were undoubtedly the immense sheets of Bog-bean (*Menyanthes trifoliata*) in full flower, the graceful plants completely filling some of the quiet lagoons of the canal. In addition the Greater Spearwort (*Ranunculus lingua*) was noted, as well as the following *Carices*:—*C. glauca*; *C. praecox*; *C. paniculata*; *C. vesicaria*. Two of the members who visited the quarries later in the evening found the Fuller's Teasel (*Dipsacus sylvestris*) near Magheraberry, this being N. H. Foster's station.

One member crossed to the southern shore of the Broadwater and reported that the woods fringing that side were mainly composed of native trees and shrubs, noting the following species:—Oak, Ash, Hazel, Crab Apple, Cherry (probably not native), Grey Willow, and Spindle Tree in some quantity. Amongst the undergrowth Early Purple Orchid (*Orchis mascula*) and Wood Crowfoot or Goldilocks (*Ranunculus auricomus*) were the most conspicuous flowers, whilst the somewhat rare Wood Sedge (*Carex sylvatica*) was collected. Along the tow-path between Hammond's Bridge and Moira a large quantity of Adder's-tongue Fern (*Ophioglossum vulgatum*) was seen.

Mr. A. W. Stelfox worked the canal with a dredge for fresh-water shells and brought up specimens of the following :—*Limnea peregra*, *L. auricularia*, var. *acuta*, *L. stagnalis*, *Physa fontinalis*, *Planorbis carinatus*, *Pl. albus*, *Pl. glaber*, *Pl. fontanus*, *Bithynia tentaculata*, *Valvata cristata*, *V. piscinalis*, *Anoaonta cygnea*, *Sphaerium corneum*, *Sph. lacustre*, *Pisidium amnicum*, *P. casertanum*, *P. nitidum*, *P. hibernicum*, *P. milium*, *P. subtruncatum*, *P. henslowanum*, and *P. parvulum*.

The last mentioned species, undiscovered in the British Islands until 1915, proved new to the fauna of the province of Ulster and was quite an unexpected find, as it had been searched for previously in L. Neagh without success. It was taken in three places : at western end of the Broadwater, just east of Hammond's Bridge, and abundantly half a mile west of Moira station.

The return journey was made by Hammond's Bridge and Soldierstown Church, and thence through the grounds of Broomount (by kind permission of Mr. Wm. Best) to Moira Market House where tea was served.

After tea the party was led by Rev. Wm. Wetherall, Unitarian minister of Moira, through the grounds of Moira Demense (by kind permission of Mr. J. L. Douie), and so brought a most successful afternoon to a happy conclusion.

At the usual business meeting after tea the following new members were elected :—Captain C. D. Chase, M.A., Miss Warnock, Miss MacDonnell, and Dr. T. M. Deans, LL.D.

THE FLUSH.

The second excursion of the Summer Session (under the conductorship of Mr. S. Wear) was held on 31st May, when a party of 56 members left the City Hall by Special Car for Ligonell promptly at 2.30 p.m., the weather being very hot but with an exceedingly hazy horizon.

The objective was to have been the Flush but at the last moment the route was changed to a line along the slopes of Squire's Hill and Colinward, and so on to Glengormley, where, at 6-20 p.m., tea was served in a field adjoining the Whitewell Laundry, after which the bulk of the members adjourned to the Nursery Gardens of Mr. M'Ilwaine, whilst a few members paid a hurried visit to Carnmoney quarry and secured some fine specimens of the chalcedony for which this quarry is so justly famous.

Amongst the botanical finds were the following :—Butterwort (*Pinguicula vulgaris*), Milkwort (*Polygala vulgaris* and *P. serpyllacea*), *Alopecurus geniculatus*. Five common sedges : *Carex Goodenowii*, *C. panicea*, *C. glauca*, *C. binervis*, *C. flava*, and the Adder's-tongue Fern (*Ophioglossum vulgatum*).

ISLAND MAHEE, STRANGFORD LOUGH.

The third excursion of the Summer Session (under the conductorship of Messrs. W. B. Burrowes and R. May) was held on 14th June, when a party of 33 members journeyed by motor char-a-banc to Island Mahee.

On reaching the Island a visit was first paid to the Round Tower and the site of the old Church of St. Mochae when an interesting address was given by Mr. R. May on the history of Island Mahee (*Inis Machaoi*) and its connection with the ancient ecclesiastical foundation of Nendrum, first established by St. Mochae about the year 450 A.D.

After luncheon Mr. Robert Ardill very kindly took the members in two motor launches for a tour among the islands, the course followed being down Ringhaddy Sound and back by the outer channel. The journey was most delightful, the lights and shades on water, hills, and islands being entrancing.

Tea was served at Mr. Ardill's house and at the business meeting following feeling references were made to the recent

deaths of Rev. C. H. Waddell, M.A., B.D., M.R.I.A., a member of 40 years standing, and Mr. Adam Speers, J.P., B.Sc., a member of 51 years standing. Votes of condolence, proposed by Mr. S. A. Bennett and seconded by Mr. S. Wear, were passed to the families of the above members.

On the return journey a brief halt was made at Ringneill House to visit Mr. D. E. Lowry's rock garden, the visit adding another pleasant incident to a day which, in the unanimous opinion of all present, had been a record one in the history of Field Club excursions.

CARNGAVER.

The fourth excursion of the Summer Session (under the conductorship of Mr. A. W. Stelfox) was held on 28th June, when a party of 20 members journeyed to Dundonald by the 2-15 p.m. train, en route by field paths and bye-roads for Carngaver (720 feet) the highest of the hills to the east of Holywood.

Just to the east of the cairn on the summit of the hill a grand patch of the Small Winter Green (*Pyrola minor*) was pointed out by the conductor. He next led the members to a piece of heathy bog about half a mile to the west of Carngaver, a spot especially rich in Orchids and sheltering other interesting and somewhat local plants.

Six species of Orchids were here seen in flower:—Spotted Orchid (*Orchis maculata*), *O. praetermissa*, Butterfly Orchid (*Habenaria bifolia*), *Habenaria ochroleuca*, Frog Orchid (*H. viridis*), and *Gymnadenia albida*.

Amongst other plants noted were Creeping Water Scorpion-grass (*Myosotis repens*), Common Butterwort (*Pinguicula vulgaris*), and the Sedges:—Flea Sedge (*Carex pulicaris*), Yellow Sedge (*C. flava*), Tawny Sedge (*C. fulva*), Green-ribbed Sedge (*C. binervis*), Glaucous Sedge (*C. glauca*), Pink-leaved Sedge or Carnation Grass (*C. panicea*), Star-headed or Little Prickly Sedge (*C. stellulata*), and Common Tufted Sedge (*C. Goodenovii*),

After tea, which was partaken of at the cairn, Mr. C. B. Horsbrugh was elected a member, the members subsequently returning home by various routes.

KILLOUGH AND ST. JOHN'S POINT.

The fifth excursion of the Summer Session (under the conductorship of Mr. S. A. Bennett) was held on 26th July, when a party of 17 members journeyed to Killough, en route for St. John's Point.

On reaching Killough the members at once proceeded to Rossglass, where lunch was partaken. After lunch the party made a leisurely journey along the shore to St. John's Point Lighthouse, finding on the way a bee's nest made of grass and built in a crack of the rocks; and a sea-gull's nest, probably that of a tern, containing two unfledged young ones. These latter had crept away on being disturbed and hidden themselves in cracks of the rocks, where they were almost invisible owing to their colouring so closely imitating the colour of the rocks.

Tea was partaken at the Lighthouse, a plentiful supply of hot water being supplied by the Principal Keeper (E. Birrells), Mrs. A. M'I. Cleland contributing the tea.

From the Lighthouse the party proceeded to St. John's Church and St. John's Holy Well, where a very interesting address, an abstract of which follows, on the ecclesiastical history of these structures was given by Mr. W. B. Burrowes. Thence the members made their way by road and field path to Killough Station, time not permitting a return journey by the shore to Killough Harbour.

With regard to the botany of the district it may be mentioned that all the plants which had been formerly noted were seen during the day with the exception of *Erodium maritimum* and *Limonium occidentale*. It is now some years since either of these was seen and it is an open question whether they should be regarded as permanent members of the Co. Down Flora.

The following were seen in some stations:—*Obione portucaloides*, *Merienesia maritima*, and *Mentha rotundifolia*. Other plants of interest included *Sinapis alba*, *Sagina nodosa*, *Orchis pyramidalis*, and *Juncus obtusiflorus*.

Dr. A. R. Derryhouse, D.Sc., F.G.S., M.R.I.A., writes as follows with reference to the geology of the district:—The road from Killough to the R.C. Chapel at the eastern end of Dundrum Bay passes over several mounds of glacial deposits which are elongated in the north and south direction characteristic of the district. The foreshore from the chapel to the lighthouse at St. John's Point consists of silurian grits and slates which are highly inclined towards the south, the dips varying from 30° to 60° and in one or two instances reaching 90° . The Silurian Rocks are intersected by numerous dykes of basalt whose general trend is N.W. to S.E. Some of these dykes have large porphyritic feldspars and others are amygdaloidal.

The Silurians are covered by glacial gravels, the general direction of glaciation as shown by the axes of the drumlins and of the *roches moutonnées* being from north to south. On the beach, however, several boulders of Red Granite and dark Hornblende Gabbro, provisionally identified as coming from the Slieve Gallion area in Tyrone, were found. These would indicate an extension of the western ice, previously traced as far as Soldierstown and Hillsborough, to the shores of Dundrum Bay.

In some of the small bays along this section of the coast springs issuing from the base of the glacial gravels have rendered the ground swampy and a complete change in the flora was noticed on entering these areas, the ordinary maritime plants being replaced by marsh vegetation.

Time did not permit of the party visiting the calcrete glacial gravels of Corbet Head at the entrance to Killough Bay as had been originally intended.

St. John's Chapel (Styour Tigh-Eoin, John's House) or Church was of very ancient style of architecture, measuring 20

x 30 feet in the clear. The East Window was small and narrow, terminating in an acute angle, formed by the inclination of two flags; the West Doorway 5 feet 6 inches high and 2 feet 1 inch wide at the top, expanding to the threshold where it is 3 feet in width; in the South Wall a window 2 feet 5½ inches high, 1 foot 4 inches at top and 1 foot 9 inches at bottom; in both instances a single flag forms the arch. Near the Church several stone coffins of singular shape were dug up, together with massive gold ornaments and curious coins. The stone coffins were the stone lined graves which occur in all the ancient cemeteries in this part of Down and Connor, the direction of the graves being generally from east to west, but in the cemetery of St. John's Point and elsewhere the cists are arranged in a circle, to the centre of which the feet converge. In the exploration of the Christian cemeteries at Ephesus the graves of the Christians are found radiating from a central point which is supposed to be the tomb of St. John the Evangelist.

GLENOE.

The seventh excursion of the Summer Session (under the conductorship of Mr. S. M. Macoun), was held on 16th August, when about 16 members travelled by the 1-30 p.m. train to Magheramorne, thence proceeding to Glenoe by the slopes of Black Hill, returning by way of Glynn river to Glynn, whence they returned to Belfast by the 8-0 p.m. train, the day being favoured by very fine weather, the altitudes of the roads traversed affording very wide and excellent views of Larne Lough.

The following plants were noted en route:—Spotted Dead-nettle (*Lamium maculatum*) with well-marked spots on leaves; Shining Cranesbill (*Geranium lucidum*); a fine clump of Rosebay or Flowering Willow (*Epilobium angustifolium*), no garden being near; and plants of Dogs' Mercury (*Mercurialis perennis*) by the side of the river near Glynn.

HILLSBOROUGH.

The eighth excursion of the Summer Session (under the conductorship of Mr. N. H. Foster), was held on 30th August, when a party of 30 members left Belfast by the 2-0 p.m. train and on arrival at Hillsborough were admitted to the Marquis of Downshire's picturesque demesne, by kind permission of Lord Arthur Hill, where the numerous shrubs, and particularly the fine and varied assemblage of conifers, were much admired. Among the conifers growing luxuriantly here the following were noted:—the yew and its Irish variety; junipers and cypresses of sorts; larch and silver firs; Norway, Hooker's, shrubby Alpine, and Douglas spruces; monkey puzzle; Scots, Royal, Austrian, and Weymouth pines, cedars of Lebanon and Deodars. The ponds in this demesne are the habitat of numerous species of fresh-water molluscs, including the swan mussel, of which specimens measuring almost six inches in length are not uncommon here.

A visit was paid to the alleged ruins of old Cromlyn Church—Cromlyn being the ancient name for Hillsborough—and the opinion was expressed that, although the old church did probably stand hereabout, the present erection of triassic sandstone was not of very remote origin.

At 5-0 p.m. the party was conducted to Hillsborough schoolroom, where cups and saucers and a supply of hot water were available for tea-making, each member providing the necessary ingredients. After tea a short business meeting was held, Mr. N. H. Foster occupying the chair, when on the motion of Mr. F. A. Heron, J.P., seconded by Mr. E. Bennett, a cordial vote of thanks was passed to Lord Arthur Hill for the privilege accorded the Club. The election of Messrs. A. S. Mayes, B.A., and J. M'Caw, B.A., concluded the proceedings. The members afterwards returned to Belfast by the 6-17 train, having spent a most enjoyable afternoon.

Winter Session.

NOTE.—*The authors of the various Papers of which abstracts are given, are alone responsible for the views expressed therein.*

CONVERSAZIONE.

The Winter Session was inaugurated with a Conversazione, held in the Carlton Hall on Tuesday evening, 21st October, about 150 members and friends being present.

The following exhibits were contributed :—

GEOLOGY.—Mr. R. Bell showed a fine collection of minerals including iron quartz in hematite ore and three specimens of smoky quartz in hematite from Slieve Gallion ; chalcedony and calcite from the Upper Chalk, Slieve Gallion, and a fine specimen showing the junction of chalk and basalt from Squire's Hill. J. Gourlay, a junior member, exhibited an excellent collection of fossils from the Upper Cretaceous, a display which gained first prize in the Junior Section of the Club. Miss Andrews showed a fine specimen of the volcanic product "Pelés Hair" from the Sandwich Islands.

BOTANY.—The botanical exhibits included the following :—Mrs. A. M'I. Cleland, Maize grown in Knock. Mr. R. Ll. Praeger, plants of County Down Coast. Rev. W. R. Megaw, a series of grasses ; a form of heath-rush (*Juncus squarrosus*), with a leafy stem, from Lough Ira, County Derry. Miss M. W. Rea, leaf forms in the Ranales. Mr. A. M'I. Cleland, 119 specimens of various timbers. Mr. S. A. Bennett, four species of sand spurrey (*Spergularia*) from County Down and Co. Antrim ; *Cerastium arvense* from Antrim. Mr. S. M. Macoun, set of fern leaves. Mr. W. Porter, a selection of mosses (*Hypnaceae*). Mr.

J. Glover, Irish mosses and liverworts. A fine exhibit was tabled by Professor Yapp and the members of the Botanical Staff of Queen's University, Belfast. This demonstrated the means by which water plants obtain and store air. It was illustrated by living plants, diagrams and microscopic sections, together with a collection of preserved specimens from the herbarium of the late Rev. C. H. Waddell. In the Junior Section J. R. H. Greeves showed plants from the Newcastle (Co. Down) sandhills, and E. A. Armstrong exhibited a fine collection of saxifrage rosettes and leaf forms, this display obtaining the second prize in the Junior Section.

ZOOLOGY.—Mr. J. Orr exhibited a fine case of butterflies, mounted by Mr. Shiels in his usual artistic manner. Mr. C. B. Horsbrugh, skins of Canadian and British birds. Mr. W. Rankin, microscopic examples of the young of the common shore crab and the lobster. Six cases showing protective resemblance among insects, loaned by the Municipal Museum. Mr. A. M'I. Cleland, land mollusca from Ballycastle (County Antrim) area. Miss Sayers, wasps' nests. Mr. E. A. Armstrong, drawings illustrating the life of the oak egg-moth.

ARCHÆOLOGY.—This branch was represented by some most interesting old editions of various books, and a collection of letters and MSS. exhibited by Miss Andrews and Mr. R. May.

Tea was served in the Carlton Restaurant at 8-15 p.m., after which a short business meeting took place when feeling references were made to the recent death of Sir William Q. Ewart, one of the Club's life members, a vote of condolence, proposed by the President (Mr. A. M'I. Cleland) and seconded by the Vice-President (Mr. S. A. Bennett), being passed in silence.

A Junior member was elected, and after the principal items in the programme of papers arranged for the forthcoming Session had been commented upon by the President, a most successful evening was brought to a close.

“FIAT LUX,” AS APPLIED TO FIELD CLUB WORK.

The first ordinary meeting of the Winter Session was held in the Museum on Tuesday, 18th November, when an address was given by the President (Mr. A. M'I. Cleland) the motive of which was the motto, “Fiat Lux,” of the Club's seal.

In his address the President traced the gradual development of the spirit of discovery, exploration, and scientific research from the fifteenth century to the present day, instancing the work of Magellan, Drake, Cook, Franklin, Livingstone, and Scott in particular.

Considerable reference was made to the War and its effect on bird life in the various battle zones, from which it appeared that birds treated the war with absolute indifference, larks, nightingales, and thrushes singing their loudest in the midst of the hottest engagements.

Some interesting facts were also brought out connected with the work of geologists on the Western front, who were chiefly concerned with questions of water supply, location of dug-outs, and mining and tunnelling operations.

Slight reference was made to some observations which had been recorded concerning the audibility of gunfire in South-East England, from which it was demonstrated that audibility was entirely confined to the summer months.

The address was illustrated by a very fine series of lantern views illustrating the work of the Club in its various activities.

A vote of condolence was passed to the relatives of the late Mr. Thomas Plunkett, M.R.I.A., of Enniskillen, one of the Club's Honorary Members.

With the election of a new ordinary member and the transference of Dr. J. K. Charlesworth, the Club's late Hon. Secretary, to the class of Corresponding members, the proceedings terminated.

THE ECOLOGY OF THE LOWER PLANTS.

The first special meeting of the Winter Session was held in the Museum on Tuesday, 2nd December, when a paper on "The Ecology of Plants," prepared by the late Rev. C. H. Waddell, M.A., B.D., M.R.I.A., was read by Mr. S. A. Bennett, B.A., B.Sc., the President (Mr. A. M'I. Cleland) in the chair, about 20 members being present.

The paper dealt with mosses and lichens found in different habitats.

Maritime species are *Pottia Heimii* and *Grimmia maritima*; others not found quite so near the sea are *Ulota phyllantha* and *Trichostomum crispulum*. Special adaptations to resist salt spray and spells of drought were mentioned, curling and unfolding of leaves, papillosity and outgrowths of parallel plates of tissue as in the *Polytrichaceae*.

On grassy banks on their seaward side occur *Tortulas* and *Hypnum squarrosum*, on their landward side *Weissia viridula*, *Fissideus bryoides*, and *Dicranella varia*.

The genus *Polytrichum* affords a number of species which are adapted to very different environments e.g.:—*Polytrichum commune*, a plant of marshes and wet woods; *P. strictum* and *P. gracile* only on peat soils; *P. juniperinum* on sterile heaths; *P. piliferum* on moving sands; and *P. formosum* in dry shady situations.

Brackish spots are usually barren of cryptograms but passing away from the shore into the fields one notices *Hypnum cuspidatum*, *Hylocomium squarrosum*, *Brachythecium purum*, and *B. Rutabulum*.

On walls are found the Calciolae species: *Barbula cylindrica* and *Eucalypta strepto-carpa*, and in woods, amongst other mosses, *Hypnum cupressiforme* var. *filiforme*.

The growth and reproduction of many of these mosses were described during the course of the paper, which was profusely illustrated by specimens exhibited by the Rev. W. R. Megaw and

Mr. Wm. Porter, the following members taking part in the subsequent discussion :—Messrs. Bennett, Wear, Porter, Megaw, and the President.

SOME ASPECTS OF PLANT LIFE.

The second ordinary meeting of the Winter Session was held in the Museum on Tuesday, 16th December, when Mr. R. Ll. Praeger, B.A., B.E., M.R.I.A., read a paper entitled "Some Aspects of Plant Life" before an audience of good average attendance, the paper being illustrated by blackboard sketches.

The author pointed out that the diversity of plant life indicated a high antiquity for the origin of life. There were two ways to approach the question as to when or where plant life originated—the palaeontological, based on the evidence supplied by fossil plants in rocks of different ages, and the other based on arguments derived from the forms still living. He dwelt on the scrappy nature of evidence from the rocks, and on the fact that the story told by rocks does not extend far enough to help us in determining when and where plant life originated. Among organisms still living there were extremely simple forms, such as bacteria, which probably indicated the source whence the higher organisms were derived. The successive steps in the evolution of plant life were then traced—the discovery of chlorophyll (a very early step); the colonization of land by forms originally aquatic; the introduction of pollination through the air; finally, the employment of insects as pollinators, with consequent evolution of showy flowers.

The question of the possibility of life, as known on earth, upon other heavenly bodies was next dealt with, and it was stated that among the planets Venus alone held out a fair prospect of being inhabited. But a protest was lodged against the assumption that all life must be confined to the limits, physical and chemical, within which it exists upon our earth, and a picture was drawn of the possibility of life in the Sun.

Returning to terrestrial life, the problems of life under unfavourable conditions were dealt with. It was pointed out that lack of water was the most frequent difficulty plants encountered, whether in hot regions or cold, pictures being drawn of the problems of plant life on high mountains, in the Arctic regions, in hot deserts, salt marshes, peat bogs.

Finally, the lower limit of plant life was considered, it being pointed out that the Flowering Plants found growing as aquatics were not originally inhabitants of the water, but were descended from land forms; the author concluding with a reference to the difficulties which Flowering Plants have found in colonizing the sea, as shown by the fact that in the whole native flora only one species—the Grasswrack (*Zostera marina*)—is thoroughly marine.

A short discussion followed the reading of the paper, in which the President (A. M'I. Cleland) and Mr. B. M. Griffiths took part.

With the election of a new member the proceedings terminated.

BYE-GONE PUNISHMENTS.

The second special meeting of the Winter Session was held in the Museum on Tuesday, 6th January, when Mr. J. A. S. Stendall read a paper entitled "Bye-gone Punishments," with lantern illustrations, about 15 members being present.

The paper dealt with such instruments of punishment as the pillory, whipping post, stocks, branding irons, ducking stool, bridle, &c., in a very lucid and entertaining manner. There were copious reference to historical documents giving detailed accounts of various instances in which the above instruments were applied, the lantern views showing photographs of actual specimens, or sketches, or reproductions of old prints. The whole paper was listened to with great attention by the small but very appreciative audience.

In a short discussion following the paper the following members took part:—the President (Mr. A. M'I. Cleland), Mr. A. R. Hogg, and Mr. T. Edens Osborne.

HUNTING FOR THE LIVING BIRD OF PARADISE IN BRITISH
NEW GUINEA.

The third ordinary meeting of the Winter Session was held in the Museum on Tuesday, 20th January, when Mr. C. B. Horsbrough gave a most interesting lantern lecture on "Hunting for the Living Bird of Paradise in British New Guinea," before a large and most appreciative audience.

It appeared, from the lecturer's remarks, that his mission to New Guinea took place in 1908, and that the actual collecting of his specimens was done by the natives, who searched out the "dancing" places of the birds, these being spots in the jungle where the birds assemble and where the male birds "dance" before their admiring females, strutting to and fro and exhibiting their beautiful plumages. Having found such a "dancing" place the natives surround it with netting and then suddenly bursting in upon the birds frighten them into the nets and so capture them.

Great difficulty was experienced in inducing the birds to feed after capture. Eventually they were persuaded to feed on sultana raisins, soaked in water. When this food ran short, a native suggested a change of diet which was most unfortunate in its result, more than half the birds then collected (70 in all) dying from the effects of the new food. The remainder were saved by changing the diet again, and including in it some of the cooked meat from the bodies of the dead birds. By great exertions the lost birds were replaced during the remaining three weeks of the mission's stay in New Guinea.

On reaching Australia the lecturer had great difficulty in obtaining permission from the authorities to land his catch, owing to the fears the Australian Government has of any new species of either animals or plants being introduced into the continent. Having sacrificed a fine collection of orchids he had brought with him (by throwing them overboard) he was at length allowed to land his cages on giving an undertaking that none of the birds

should escape. Several did escape, as the cages were mostly very poorly made by native Papuan material and labour, but were re-captured and bought back again, at a greatly enhanced figure, from the astute dock labourers who had secured them.

Eventually the consignment, in the personal charge of the lecturer, reached London and the Zoological Society quite safely, much to the delight of all bird lovers.

The lecture was illustrated throughout by a series of beautiful lantern views from the lecturer's own photographs and at its close the President (Mr. A. M'I Cleland) proposed a hearty vote of thanks to the lecturer, which was passed with acclamation.

PLACE NAMES OF STRANGFORD LOUGH AREA.

The third special meeting of the Winter Session was held in the Museum on Tuesday, 3rd February, when Mr. J. R. H. Greeves read a paper entitled "Place Names of Strangford Lough Area," with blackboard illustrations, 21 members being present.

The author remarked that the Celtic language in its various branches was spoken in early times over a wide area of continental Europe, and that places so far apart as London and the river Don possessed Celtic names. He next enumerated various corruptions that had crept in during the course of centuries, and showed that the original forms were often to be found in Annals, Charters, Inquisitions, etc. He mentioned the Hamilton and Montgomery MSS. as valuable storehouses of old local forms, and thence proceeded to the names themselves. A large number of Strangford Lough islands possess Celtic names, among them Mahee, which takes its name from a fifth century saint who founded a monastery there in A.D. 450; Reagh, the "grey" island; Rainey; Sketrick; Trasnagh; etc. Dunnynell, a fort-like island, is interesting as the traditional spot where Niall of the Nine Hostages kept the hostages exacted from conquered kings, its name meaning "The fort of the hostages."

Of the four baronies bordering the lough (Castlereagh, Dufferin, Lecale, and Ards), that of Lecale only received its name "Cathai's portion" after A.D. 750, having previously been known as Maghinis, *i.e.* "the island plain."

Of the 15 parishes bordering the lough mention was first made of Down and the evolution of the name of its capital city, Downpatrick, was traced from the original title "Araskeltchar" through "Dundalethglas" to its present form, Keltchar being noted as the name of one of the famous "Red Branch Knights." The writer also drew attention to Saul, "a barn" whose abbey was founded by St. Patrick A.D. 432. In connection with Nendrum mention was made of Ballydrain (the town of the black-thorn), and attention was drawn to a legend of St. Mochaoi, the founder of Nendrum.

With reference to townlands the author classified them by dividing them into those named from (1) natural features, *e.g.* Ardkeen (pleasant height); (2) buildings, *e.g.* Ballintougher (town of the causeway); (3) historic or legendary events, *e.g.* Castle Espie (bishop's castle); and (4) various, *e.g.* Cattoghs (warlike), Ringneill (point of the Irish).

In a discussion subsequent to the paper the following members took part:—the President (Mr. A. M'I. Cleland), Messrs. S. A. Bennett, R. May, S. M. Macoun, and Father John F. Shiels.

SALT INDUSTRIES OF THE WORLD.

The fourth ordinary meeting of the Winter Session was held in the Museum on Tuesday, 17th February, when Mr. G. C. Reilly read a long and most interesting paper on the "Salt Industries of the World" before an exceptionally good and attentive audience, the President (Mr. A. M'I. Cleland) in the chair.

In his opening remarks the lecturer generalised on Salt and made many references to its ancient use, deducing from the latter the long recognised importance of Salt as a cleanser, purifier, and essential article of diet.

In tracing the geology of Salt it was shown that the formation of Rock Salt must have required a very lengthy period, the estimate of Professor Thompson of 21,000 years for a 60 yard bed being quoted.

Diagrams of Carrickfergus borings were shown, the lecturer pointing to the fact that to lengthened dry spells was attributable the pure Rock Salt beds; whilst the Marls or Marl and Rock Salt would be accounted for by storm washings, and the denudation of crystals by the influx of additional quantities of fresh water.

In arriving at the probable geological period of the major deposits it was shown that whilst some are in the Triassic, most are in the Permian, the oldest known deposits being in the Punjaub which are believed, with tolerable certainty, to belong to the latter period.

The manufacture of salt was dealt with most fully, including crystallisation, drying, and marketing, much detailed information being given of various methods and systems of salt extraction, solar, tank, open pan, Hodgkinson, Scott, and Tee processes being mentioned among others, the author concluding with some interesting remarks on the various uses of Salt.

The paper throughout was profusely illustrated by a very fine series of lantern views made and exhibited by Mr. A. R. Hogg. In addition the author had on view an interesting exhibition of specimens of Rock Salt, both white and gray; pseudomorphs of Salt in clay from the Carrickfergus area; samples of all grades of finished Salt, and examples of the various instruments used in the different processes of manufacture.

A vote of thanks was proposed to the author by Dr. A. R. Derryhouse, who in his remarks rapidly reviewed the geology of the Salt bearing rocks. The vote was happily seconded by Mr. S. A. Bennett and passed by hearty acclamation.

With the unanimous election of Mr. G. C. Reilly as an ordinary member of the Club, a most enjoyable meeting was brought to a close.

OUR LOCAL ROSES.

The fourth special meeting of the Winter Session was held in the Museum on Tuesday, 2nd March, when Mr. S. A. Bennett, B.A., B.Sc., read a paper entitled "Our Local Roses," with black-board illustrations, 22 members being present.

The author summarised the main points of difference which are used for the purposes of classification, these differences being found in :—

(a). The behaviour of the sepals before and after pollination. In certain plants the sepals are reflexed after pollination and fall off when the fruit matures, *e.g.* :—*R. canina* (L.) and *R. dumetorum* (Th.). In others the sepals rise and crown the fruit, becoming either spreading or connivent. They may then either fall off when the fruit ripens, as in *R. rubiginosa* (L.) and *R. tomentosa* (Sm.); or they may live the life of the fruit to the end, being truly persistent as in *R. mollissima* (Willd).

(b). The armature of the plant. In the *Spinosissimæ* the prickles are many, slender, and unequal; in the *Villosæ* they are uniform and nearly straight; in the *Caninæ* they are hooked and scattered, becoming more slender upwards.

(c). The characters of the ripe fruit. In this connection, by the kindness of Mr. S. Wear, a letter was read from Major A. H. Wolley-Dodd—one of the foremost English rosarians—in which it was stated that, for accurate identification, the ripe fruit, gathered as late as September or October, should always accompany the flowering shoot.

(d). The serration of the leaves and the presence or absence of glands or hairs. These are minor points, but are

used to subdivide a group like the roses included under the name Common Dog Rose (*R. canina* L.) into its varieties. For instance in *R. canina* (L.) the leaves may be glabrous or hairy. If the leaves are hairy on both sides—especially on the underside veins—the serrations of the leaves being simple and not tipped with glands but ciliated, *i.e.* having hairs placed like eyelashes on the edges of the serrations, it is *R. dumetorum* (Th.). If, however, the leaves are quite smooth on both sides it may be *R. lutetiana* or *R. dumalis*. In *R. lutetiana* the leaf serrations are simple and the sepals have no glands. Whilst in *R. dumalis* the leaf serrations are double and both sepals and leaf stalks are glandular.

In conclusion, hints were given on the collection and preservation of specimens, the paper being spoken to by the President (Mr. A. M'I. Cleland), Mr. B. M. Griffiths, Rev. W. R. Megaw, and Miss M. W. Rea.

BIRDS : THEIR HABITS, HAUNTS, AND HOMES.

The fifth ordinary meeting of the Winter Session was held in the Museum on Tuesday, 16th March, when Mr. D. C. Campbell, J.P., M.B.O.U., read a paper on "Birds : Their Habits, Haunts, and Homes" before a large muster of members, the President (Mr. A. M'I. Cleland) being in the chair.

The author stated that Birds occupy a most important place in the chain of life the Creator has placed upon the earth, by keeping up the balance of nature. They render great service to farmers and gardeners in checking an excessive increase of insect life. In fact, if the world were suddenly deprived of birds, agriculture would be impossible.

The British Isles are particularly well situated for the study of bird life owing to their geographical position and mild winter climate. There are 377 species on the British list, of which 376

are found in other lands. One, the Red Grouse, is purely a British bird, found in no other country.

In the tropics birds are decked in most brilliant coats, the intensity of colour and dazzling hues of Birds of Paradise and Humming Birds almost baffling description. Our own birds are of quieter hues, yet all are beautiful.

The author next described the structure of birds and their wonderful covering of feathers. Birds are the second highest class of animals, coming above reptiles and below mammals, but having affinities with both these classes.

He referred to the power birds have of retaining their hold, say, upon a branch whilst asleep; also to the fact that birds alone amongst the higher animals close their eyes in dying.

The power of flight was dwelt upon, speeds and distances traversed being given. It is estimated that a bird can remain on the wing for fifteen hours at a stretch, and can accomplish a journey over-sea of five to six hundred miles.

Nests, eggs, and young were dealt with and instances given in which parent birds adopted wonderful devices and faced great danger to draw one away from their broods.

The author referred at some length to the songs of birds, specially dwelling upon the notes of our local feathered friends, such as the thrush, blackbird, lark, chaffinch, robin, wren, &c. He mentioned that only birds and man possessed the divine gift of music. The voice of a bird was much more powerful than the human voice. If our voices were, for instances, equal in volume to that of the robin, we could be heard for a distance of ten miles.

The paper concluded with references to migration, its causes, the routes pursued, its regularity, &c., &c.

The paper was illustrated by a very fine series of lantern views, and was of enthralling interest from start to finish. At its close Mr. Nevin H. Foster M.R.I.A., F.Z.S., and Mr. S. A. Bennett, B.A., B.Sc., very happily voiced the feelings of the audience.

ANNUAL MEETING.

The Annual Meeting was held in the Museum on Tuesday, 20th April, 1920, the President (A. M'I Cleland) in the chair, there being a good attendance of members.

The following motion, brought forward by Mr. W. B. Burrowes, was adopted:—"That paragraph 2 of Rule III. be deleted, and the following be substituted:—"The Ordinary Members shall be proposed and seconded at any ordinary meeting of the Club, and such members may be elected at the next ordinary meeting following, by a majority of votes, provided that in the meantime the first annual subscription has been paid.'"

The following motion, brought forward by Mr. S. M. Macoun, was also adopted:—"That the words—"and whose residence is not less than twenty miles from Belfast"—as applying to the election of Honorary Members, shall be deleted from Rule IV."

The Annual Report was read by Mr. J. A. S. Stendall, the Treasurer's Statement by Mr. S. M. Macoun, and the Librarian's Report by Mr. S. Wear. On the motion of Mr. F. A. Heron, seconded by Mr. W. C. Boyd, it was resolved that these reports be adopted, printed and circulated as usual.

The election of Office-bearers for 1920-21 was then proceeded with, the following selections being made:—President: Mr. S. A. Bennett, B.A., B.Sc.; Vice-President: Rev. W. R. Megaw, M.A.; Hon. Librarian: Mr. Sylvanus Wear; Hon. Treasurer: Mr. S. M. Macoun; Hon. Secretaries: Mrs. G. G. Gibson and Mr. A. M'I. Cleland; Hon. Sec. for Geology: Dr. A. R. Derryhouse, F.G.S., M.R.I.A.; Hon. Sec. for Botany: Mr. Wm. Porter; Hon. Sec. for Zoology: Mr. J. A. S. Stendall; Hon. Sec. for Archæology: Mr. W. B. Burrowes; Hon. Sec. of Junior Section: Miss S. Blackwood.

A ballot was next taken for the election of six ordinary members of Committee, with the following results:—retire in

1921 : Mr. R. May, Mr. W. Faren. Retire in 1922 : Mr. A. R. Hoger. Retire in 1923 : Mr. N. Carrothers, Dr. T. M. Deans Mr. D. Elliott.

Under the terms of the amended Rule IV. the following Ordinary Members, all of long standing in the Club and intimately associated with its work and activities, were unanimously elected Honorary Members : Mr. G. Donaldson, Canon H. W. Lett, M.A., M.R.I.A., and Mr. W. H. Phillips.

On the motion of Mr. A. M'I. Cleland, seconded by Mr. J. A. S. Stendall, a resolution in favour of the proposed Plumage Bill now before Parliament was passed and the Hon. Secretaries were instructed to forward copies of same to the various Members of Parliament for Ulster.

Under the amended Rule III., the following were proposed and seconded for membership in the Club :—Mrs. J. Moderate, Mr. I. J. Megaw, Mr. W. B. Hale, Miss F. M. M'Kee, Miss Eva M'Kee, Miss S. Montgomery, Miss G. Montgomery.

The proceedings then terminated.



RULES

OF THE

Belfast Naturalists' Field Club.

As amended at General Meeting held 20th April, 1920.

I.

That the Society be called "THE BELFAST NATURALISTS' FIELD CLUB."

II.

That the object of this Society be the practical study of Natural Science and Archæology in Ireland.

III.

That the Club shall consist of Ordinary, Junior, Life, Corresponding and Honorary Members. The Ordinary Members shall be proposed and seconded at any ordinary meeting of the Club, and such members may be elected at the next ordinary meeting following, by a majority of votes, provided that in the meantime the first Annual Subscription has been paid. They shall pay annually a subscription of Five Shillings. Members who are twelve months in arrear in their subscriptions shall not receive any further circulars or other printed matter.

That the composition fee for Life Membership be Four Guineas.

Junior Members, who must be between the ages of 12 and 21, shall be elected in the same way as Ordinary Members, but shall pay annually a subscription of One Shilling (1/-) from 12 years of age to 18, and a subscription of Two Shillings and Sixpence (2/6) from 18 years of age to 21. Junior Members shall not receive any printed matter except the usual notices; shall not have the power to vote; and shall not borrow books from the Club's Library without special permission from the Librarian. On attaining their majority they shall become Ordinary Members, and shall pay an annual subscription of Five Shillings (5/-).

IV.

That the Honorary and Corresponding Members shall consist of persons of eminence in Natural Science, or who shall have done some special service to the Club; that such Members may be nominated by any Member of the Club, and on being approved by the Committee, may be elected at any subsequent Meeting of the Club by a majority of the votes of the Members present. That Corresponding Members be expected to communicate a paper once within every two years.

V.

That the Officers of the Club be annually elected and consist of a President, Vice-President, Treasurer, Librarian, and one or two Secretaries, together with the Secretaries of the various Sections of the Club. That the office of President or that of Vice-President shall not be held by the same person for more than two years in succession.

VI.

That the General Committee shall consist of the above-named officers with nine ordinary members of Committee, and shall hold at least eight meetings during the year; five persons to form a quorum.

That three ordinary members of Committee shall retire annually in order of seniority, those retiring being ineligible for re-election for one year. Should any ordinary member of Committee fail to attend at least three of the Committee meetings held during the year his or her place may be considered vacant and another member elected to fill the position. No ordinary member of Committee shall hold the post of Secretary in any of the Sections. That in the event of a vacancy occurring in the General Committee a new member may be co-opted to fill such vacancy for the remainder of the year.

That nominations for ordinary members of Committee shall be sent in writing to the Secretaries on or before the 21st day of March in each year. That the privilege of nominating members of Committee shall be held by all Ordinary and Life Members of the Club. That the names of those members so nominated shall be published on the circular convening the Annual Meeting, at which the Ordinary Members of Committee shall be elected by ballot. That should the necessity arise the retiring members of Committee shall be balloted for.

VII.

The Committee may from year to year appoint Sectional Secretaries and Committees, as may be considered desirable, to further original investigations in any one or more departments of the Club's work. No financial responsibility to be incurred by any Sectional Secretary, Sectional Committee, or any Officer of the Club without the previous approval of the Club's Committee. The Junior Section to have a Committee composed of Six Members of the Club, the Chairman to be annually appointed by the General Committee.

VIII.

That the members of the Club shall hold at least Six Field Meetings during the year, in the most interesting localities, for investigating the Natural History and Archaeology of Ireland. That the place of meeting be fixed by the Committee, and that five days' notice of each Excursion be communicated to Members by the Secretaries. That each of the Sectional Secretaries shall be made responsible for the running of one Regular Excursion, the programme to provide study in the subject appertaining to the Section, and that any additional Special Excursions shall be arranged by the Secretaries of the Sections concerned.

IX.

That regular Monthly Meetings be held during the Winter Session from November till April, inclusive, for the purpose of reading Papers; such Papers as far as possible to be original, and to treat of the Natural History and Archæology of the district. That the Papers to be read be secured by a Standing Organising Committee, consisting of the Hon. Secs. of the Club, together with the Sectional Secretaries and a Chairman. That between the Regular Monthly Meetings of the Club Special Meetings open to all Members of the Club may be held, at which Papers of specialised interest would be discussed. That the Sectional Secretaries shall each be responsible for the providing of a programme for one Regular and one Special Meeting, one Regular and one Special Meeting to be arranged by the Hon. Secs. Any extra Meetings shall be arranged by the Organising Committee, if desired. That the programme for the Winter Session shall be completed by the date of its First Meeting and issued to all Members. That each notification announcing a Regular Meeting or Excursion shall also serve to notify Members of the next Special Meeting or Excursion.

X.

That the Committee shall, if they find it advisable, offer for competition Prizes for the best collections of scientific objects of the district; and the Committee may order the purchase of maps, or other scientific apparatus, and may carry on geological and archæological searches or excavations, if deemed advisable, provided that the entire amount expended under this rule does not exceed the sum of £10 in any one year.

That the General Committee may offer from time to time such prize or prizes as they may deem desirable for competition among Schools in or near Belfast.

XI.

That the Annual Meeting be held during the month of April, when the Report of the Committee for the past year, and the Treasurer's Financial Statement shall be presented, the Committee and Officers elected, Bye-laws made and altered, and any proposed alterations in the general laws, of which a fortnight's notice shall have been given, in writing, to the Secretary or Secretaries, considered and decided upon. The Secretaries to give the Members due notice of each intended alteration.

XII.

Members of other Irish Field Clubs, residing temporarily or permanently in or near Belfast, may be enrolled as Members of the Club without election or entrance fee on production of a voucher of membership of another Club, and without subscription for the current year, on production of a receipt showing that such subscription has been paid to another Club. Failing the production of such receipt, the usual subscription for the current year to be paid to the Treasurer on enrolment. The names of Members so admitted to the Club to be published with the notice of meeting following the date of their enrolment.

XIII.

That, on the written requisition of twenty-five Members, delivered to the Secretaries, an Extraordinary General Meeting may be called, to consider and decide upon the subject mentioned in such written requisition.

XIV.

That the Committee may be empowered to exchange publications and reports, and to extend the privilege of attending the Meetings and Excursions of the Belfast Naturalists' Field Club to Members of kindred societies, on similar privileges being accorded to its Members by such other societies.

RULES FOR THE CONDUCTING OF EXCURSIONS.

I. The excursion to be open to all Members, each one to have the privilege of introducing two friends. The time for commencing as many as possible of the Half-Day Summer Excursions to be not prior to 2 p.m.

II. A Chairman to be elected as at ordinary meetings.

III. One of the Secretaries to act as Conductor, or, in the absence of both, a Member to be elected for that purpose.

IV. No change to be made in the programme, or extra expense incurred, except by the consent of the majority of the Members present.

V. No fees, gratuities, or other expenses to be paid except through the Conductor.

VI. Every Member or Visitor to have the accommodation assigned by the Conductor. Where accommodation is limited, consideration will be given to priority of application.

VII. Accommodation cannot be promised unless tickets are obtained before the time mentioned in the special circular.

VIII. Those who attend an excursion without previous notice will be liable to extra charge, if extra cost is incurred thereby.

IX. No intoxicating liquors to be provided at the expense of the Club.

Exchange of Proceedings, 1919=20.

Birmingham—Natural History and Phil. Society.

Proceedings, Vol. XIV., Part 3. List of Members.

Bournemouth—Natural Science Society.

Proceedings, Vol. X.(1917-18).

Brighton and Hove—Natural History and Phil. Society.

Annual Report for 1917-18.

Bristol—Naturalists' Society.

Proceedings, 4th Series, Vol. V., Part 1.

Canadian Institute.

Transactions, Vol. XII., Part 1.

Chester Society of Natural Science, Lit. and Art.

47th and 48th Annual Reports.

Dublin—Royal Irish Academy.

Proceedings, Vol. XXXIV., Sec. B., Nos. 7, (8, 9, 10), 11, (12, 13),

" " " Sec. C., Nos. (10, 11).

" " XXXV., Sec. B., Nos. 1, 2.

" " " Sec. C., Nos. (2, 3, 4), 5, 6.

Title page and Contents, Vol. XXXIV.

Dublin—Royal Society of Antiquaries of Ireland.

Journal, Vol. XLVIII., Part 2; Vol. XLIX., Part 1.

Dumfriesshire and Galloway—Nat. Hist. and Antiquarian Society.

Transactions, Series III., Vol. VI.

Eastbourne—Natural History, Phot. and Lit. Society.

Transactions and Journal, Vol. VIII., Nos. 24 and 25.

Essex—Field Club.

Journal of Proceedings, Vol. IV., Part 2.

Essex Naturalist, Vol. I., Nos. 5 to 12; Vols. II. to IX.; and XI.
to XVII.

" Vol. XVIII., Nos. (1-6); Vol. XIX., Nos. 1, 2.

Hamilton—Association.

Journal and Proceedings, No. 29 (1912-13 to 1917-18).

Hull—Scientific and Field Naturalists' Club.

Transactions, Vol. IV., Part 6.

Leyden—Rijks Ethnographisch Museum.

Report for 1917-18.

London—British Association.

Annual Report for 1918.

„ British Museum (N.H.).

Guide to British Fresh Water Fishes.

„ The Structure of Animals in Relation to Flight.

Special Guide, Insects and their spreading of Disease.

Instructions for Collectors, Nos. 1A. and 13.

Economic Series, Nos. 2 to 8.

„ Geologists' Association.

Proceedings, Vol. XXX., Parts 1, 2, 3, 4.

„ Vol. XXXI., Part 1.

„ Linnean Society of—

Proceedings of 131st Session (Nov. 1918 to June 1919). List of
Members 1919-20.

Manchester—Microscopical Society.

Annual Report for 1918.

Marlborough—College Natural History Society.

Report, No. 67 (1918-19).

North Staffordshire—Field Club.

Transactions, Vol. LIII. (1918-19).

Norwich—Prehistoric Society of East Anglia.

Proceedings, Vol. III., Part 1 (1918-19).

Perthshire—Society of Natural Science.

Trans. and Proc., Vol. VI., Part 5 (1917-18); Vol. VII.,
Part 1 (1918-19).

U.S.A.—Californian Academy of Sciences.

Proceedings, 4th Series, Vol. VIII., Nos. 5, 6, 7. Index to
Vol. VII. (4th Series).

„ Cincinnati—Lloyd's Library.

Mycological Notes, Nos. 39 to 47.

Synopsis of the Stipitate Stereums.

„ „ Genus Cladorderris.

U.S.A.—Medford, Mass.—Tuft's College Studies.

Scientific Series, Vol. IV., Nos. 7 & 8; Vol. V., No. 1.

,, Milwaukee, City of—Public Museum.

Bulletin, Vol. III., No. 1.

,, Missouri—Botanical Garden.

Bulletin, Vol. VII., Nos. 3 to 10; Vol. VIII., Nos. 1, 2.

,, New York—Academy of Sciences.

Annals, Vol. XXVIII., pp. (1-50); (51-166). Index, Vol. XXVII.

,, Philadelphia—Academy of Natural Sciences.

Proceedings, Vol. LXX., Part 3; Vol. LXXI., Part 1.

,, Washington—Geological Survey.

Bulletins, 664, 668, 669, 676-678, 683, 685, 687, 688, 690 (Part 1),
691 (E, F, K, L, M), 693, 710 (A, B), 711 (A. B).

Water Supply Papers, 411, 422, 427, 429, 446, 457, 485.

Professional Papers, 104, 107, 109, 110, 112-114, 120 (I.), 125 (A. B).

Mineral Resources, 1916, Part I., Nos. 24 to 27, and A.

,, ,, 1917, Part I., Nos. 11 to 22; Part II., Nos.
23 to 34.,, ,, 1918, Part I., Nos. 1 to 4; Part II., Nos. 1
to 11, and Preliminary Report.

,, Washington—Government Printing Works.

Museum Report for 1917-18.



List of Members.

Any change in the Address of Members should be at once notified to the Secretaries by Post Card.

The Dates prefixed to Members' names signify date of Election.

O stands for an Original Member who signed the requisition for the formation of the Club in 1863.

Hon. Members.

- O Donaldson, George, 1 Prospect Street.
 1877. Lett, Rev. Canon H. W., M.A., M.R.I.A., Aghaderg Glebe, Loughbrickland.
 O Phillips, Wm. H., Lemonfield, Holywood.
 1902. Scharff, Robert F., B.Sc., Ph.D., F.L.S., M.R.I.A., National Museum, Kildare Street, Dublin.

Corresponding Members

- O Holden, J. S., M.D., Sudbury, Suffolk.
 1914. Charlesworth, John K., M.Sc., Ph.D., F.G.S., Geological Dept., University, Manchester.

Life Members.

1903. Stelfox, A. W., A.R.I.B.A., M.R.I.A., Mayfield, 14 Clareville Road, Rathgar, Dublin.
 1893. Wilson, Alec G., J.P., M.R.I.A., Belvoir Park.
 1893. Woolcombe, Robt. Lloyd, M.A., LL.D. (Dublin University), F.I. Inst., F.R.C.Inst., F.R.G.S., F.R.E.S., F.S.S., M.R.I.A., 14 Waterloo Road, Dublin.

Ordinary Members.

1918. Adams, Miss A. M., Rosemount, Malone Road.
 1907. Adams, Rev. W. A., B.A., Antium.
 1915. Aird, Hugh, 16 Fitzwilliam Avenue.
 1917. Alderdice, Richard S., 12 Linenhall Street.
 1866. Anderson, Sir Robert, Bart., J.P., Donegall Place.
 1911. Anderson, Miss Sarah, 4 Church View, Holywood.
 1882. Andrew, J. J., L.D.S., University Square.
 1892. Andrews, Miss E., 12 College Gardens.

1912. Andrews, Miss E. L., Inla, Comber.
1911. Andrews, Miss M. A., 50 Eglantine Avenue.
1912. Andrews, Dr. Marion B., 17 University Square.
1913. Andrews, Michael C., 17 University Square.
1916. Armstrong, Miss Dorothy, Corlea, Somerton Road.
1916. Baillie, Robert, Ellerslie, Ravenhill Park.
1907. Baillie, W. T., Marathon, Green Road, Knock.
1901. Barrett, J. H., Farnham Road, Bangor.
1915. Beattie, John Carson, Deaf and Dumb Institution, Lisburn Road.
1905. Beck, Miss, 1 Derryvolgie Avenue.
1913. Bell, D. M., Carragh Ard Lodge, Newcastle, Co. Down.
1896. Bell, E. George, Solitude, Lurgan.
1893. Bell, Robert, 64 Newington Avenue.
1917. Bell, Miss Janet M., Daisybank, Holywood.
1909. Bennett, Edward, Forth River Mill.
1908. Bennett, S. A., B.A., B.Sc., Campbell College.
1884. Bigger, Francis J., M.R.I.A., Ardriagh, Antrim Road.
1914. Bird, Miss, 18 Connaught Mansions, Prince of Wales Road, Battersea, S.W. 11.
1916. Black, S. C., 15 College Gardens.
1898. Blackwood, Miss S., 6 College Green.
Boughton, E., 10 Eia Street.
1893. Boyd, Miss, Chatsworth, Malone Road.
1894. Boyd, W. C., J.P., Hazelbank Villa, Ravenscroft Avenue.
1916. Bradley, Miss L. L., Haypark House, Knock.
1917. Bradley, Mrs., Haypark House, Knock.
1883. Brandon, Hugh B., J.P., 2 Wellington Place.
1863. Brett, Sir Charles H., Gretton Villa South.
1883. Brown, Thomas, J.P., 102 Donegall Street.
1911. Browne, G. B., 356 Ormeau Road.
1876. Bulla, Charles, 272 Lisburn Road.
1899. Burrowes, W. B., Ballynafeigh House.
1918. Byrne, Mrs., 24 College Square North.
1903. Campbell, D. C., J.P., M.B.O.U., Templemore Park, Londonderry.
1909. Campbell, John, Albert Brickworks, Carrickfergus.
1917. Campbell, James, Jennymount Mill, Belfast.
1891. Capper, J. Malcolm, 14 Linenhall Street.
1904. Carmody, Rev. Canon W. P., Lisburn.
1892. Carrothers, Nathaniel, 145 Stranmillis Road.
1892. Carson, J. C., 8 Wellington Place.
1917. Carson, James, Parkmount, Lisburn.
1914. Carter, C. S., 25 Donegall Street.
1907. Chambers, W., 35 Cranmore Avenue.
1919. Chase, Capt. C. D., M.A., Campbell College.
1901. Cheyne, H. H., Roseneath, Bangor.

1894. Cleland, Alex. M'I., Macedon, Green Road, Knock.
 1894. Cleland, Mrs. Annie, Macedon, Green Road, Knock.
 1890. Cleland, James A., Bernagh West, Malone Park.
 1917. Close, R. M., 13 Donegall Square North.
 1904. Cocking, Miss C. E., 19 Glebe Road, Huddersfield.
 1914. Corrigan, Chas., 133 Royal Avenue.
 1906. Cowie, James, Midland Railway Co.
 1913. Cunningham, Miss M. E., Glencairn, Belfast.
 1884. Cunningham, Rt. Hon. Samuel, Fernhill.
 1915. Cunningham, Josias, M.B.O.U., Fernhill, Belfast.
1916. Davis, Miss E. C., Lauraville, Balmoral.
 1915. Denby, Miss Alice M., Evetide, Westland Gardens.
 1891. D'Evelyn, Alex. M., M.D., Ballymena.
 1915. Dick, Miss M. E., M.A., Wynstay, Rosetta Park.
 1919. Deans, T. M., D.D., Academy House, Rosetta.
 1907. Doran, John, J.P., Dunottar, Malone Road.
 1909. Drummond, Miss Ina, 39 Atlantic Avenue.
 1916. Duffin, Miss Mabel W., B.Sc., Rokeby, Deramore Park.
 1908. Duncan, William, 24 Queen Street.
 1912. Dundee, Miss B., Eglantine Avenue.
 1909. Dwerryhouse, Major A. R., D.Sc., F.G.S., M.R.I.A., Queen's University.
1916. Edwards, Herbert, 54 Ulsterville Avenue.
 1916. Edwards, Mrs., 54 Ulsterville Avenue.
 1884. Elliott, David, B.A., J.P., Ardroe, Bloomfield.
1868. Faren, W., 11 Mountcharles.
 1912. Ferguson, Mrs., St. Helen's, Holland Park, Knock.
 1913. Ferguson, Samuel, St. Helen's, Holland Park, Knock.
 1918. Fildes, H., 20 Wilmont Terrace, Lisburn Road.
 1897. Finlay, Miss, St. Hilda's East, 3 Old Nichol Street, Bethnal Green, London.
 1906. Finlay, Arch. H., Willesden, Holywood.
 1899. Foster, Nevin H., F.L.S., M.R.I.A., M.B.O.U., Hillsborough.
 1903. Foster, Mrs. N. H., Hillsborough.
 1911. Foster, Miss A. B., B.Sc., Y.W.C.A., William Street, Waterford.
 1892. Fulton, David, Arlington, Windsor Avenue.
1904. Gaffikin, William, J.P., Notting Hill.
 1891. Galloway, Joseph, 50 Eglantine Avenue.
 1892. Gamble, Miss, Lorne, Craigavad.
 1913. Gardner, Miss Nettie H., B.Sc., Hawthornden Road, Knock.
 1893. Gibson, Andrew, Lansdowne Road.
 1917. Gibson, Mrs., Bonnington, Lansdowne Road.

1911. Gibson, Mrs. Jos., Hillsborough.
1905. Glover, James, Glebe, Kirkcubbin.
1885. Godwin, William, Queen Street.
1918. Gordon, Eustace, 35 Rosemary Street.
1918. Gourlay, Mrs. J., 18 Willowbank Street.
1892. Green, Mrs. Isaac, Hawthornden, Knock.
1895. Green, Wm. A., 4 Salisbury Terrace, Chichester Park.
1901. Greeves, J. Theodore, Nendrum, Knockdene Park.
1901. Greeves, W. Leopold, Ormeau Avenue.
1901. Greeves, Fergus M., Garranard, Sydenham.
1918. Greeves, Owen, Tavanagh House, Portadown.
1908. Hadden, Mrs., Magharee, Portadown.
1918. Hagan, Miss I. M., Rathcowle, Jordonstown.
1920. Hale, W. Barcroft, 6 Salisbury Gardens.
1883. Hamilton, Rev. T., D.D., LL.D., Vice-Chancellor, Queen's University.
1908. Hamilton, Miss, 5 Church Avenue, Holywood.
1877. Hamilton, John, 5 Church Avenue, Holywood.
1916. Harper, V. M., B.A., Campbell College.
1920. Halett, W., Model School, Belfast.
1916. Hawthorne, Miss, Ardglass.
1908. Henry, F. W., Ye Olde Castle, Castle Place.
1915. Herdman, Miss E. W., Fountainville, University Road.
1876. Heron, F. A., Maryfield, Holywood.
1905. Hobson, Mrs., Marino.
1895. Hogg, A. R., 13 Trinity Street.
1908. Hogg, D. J., 16 Kansas Avenue.
1903. Holland, Miss, Cadogan Park.
1904. Holland, Frank, Osborne Gardens.
1906. Hopkirk, F. G., Midland Railway Co.
1919. Horsbrugh, C. B., Blessington House, Hillsborough.
1911. Houston, Miss, Lisheen, Sans Souci Park.
1914. Houston, James Dick, Northern Bank, Elphin, Roscommon.
1913. Humphreys, Miss Norah, Lynford, Osborne Park.
1915. Hunter, Miss K., Waterford Terrace, Coleraine.
1892. Jaffé, Lady, Kinedar, Strandtown.
1909. Jenkins, W. A., 6 Elmwood Terrace.
1914. Jenkinson, Hy., 29 Rosemary Street.
1901. Johnson, Rev. W. F., M.A., F.E.S., M.R.I.A., Acton Glebe, Poyntzpass.
1906. Johnston, F. W., The Cottage, Cultra.
1916. Johnston, Miss M. B., Beechville, Glenburn Park.
1916. Kay, Miss M. P., B.Sc., Burnside, Bangor.
1917. Keiller, W., 11 Chichester Street.
1918. Kennedy, D., Pembroke, Wandsworth Road, Knock.
1899. Killen, William, 20 Waring Street.
1886. Kirkpatrick F., 27 Oxford Street.

1915. Kirkpatrick, W. H., Marlborough Park S.
 1868. Knowles, W. J., M.R.I.A., Flixton Place S., Ballymena.
 1877. Kyle, R. A., 15 Wellington Park.

 1901. Larmor, H. G., J.P., Lisburn.
 1915. Lawrie, Thomas, East Bridge Street.
 1916. Lawther, Miss M. J. V., Marathon, Antrim Road.
 1912. Ledgerwood, N. J., J.P., 10 Wellington Park.
 1916. Lees, Miss S. L., Drumadoon, Castle Park.
 1918. Lewis, Mrs. A. J., 2 Ranfurly Drive.
 1920. Lewis, Percy, 24 Mount Charles.
 1918. Lindsay, Eric, Barbaraville, Annadale.
 1899. Lindsay, Professor, M.D., 3 Queen's Elms.
 1915. Lindsay, Mrs., Barbaraville, Annadale.
 1893. Lowry, D. E., 25 Donegall Place.
 1908. Lowry, James, Llewellyn Avenue, Lisburn.
 1918. Lowry, Miss, Hazelwood, Bloomfield.
 1910. Lowry, Miss L., Hazelwood, Bloomfield.
 1917. Lyttle, James, 1 Olney Terrace, Ballygomartin Road.

 1915. MacCarthy, Mrs., Freshford, Knock.
 1905. MacCleary, A., Kensington Hotel, College Square East.
 1917. MacDevitt, H., 115 High Street, Holywood.
 1903. MacIlwaine, Capt., J. E., M.D., 26 College Gardens.
 1914. MacLaine, Lachlan, Rathaline, Annadale Avenue.
 1915. Maconachie, Rev. D. H., B.A., B.D., The Manse, Holywood
 1915. Maconachie, Mrs., Brooklands, Holywood.
 1905. Macoun, Mrs., Clanrolla, Windsor Park.
 1912. Macoun, Stephenson M., Clanrolla, Windsor Park.
 1901. MacRae, Kenneth, Balmoral.
 1920. Magowan, A., 2 Easton Crescent.
 1920. Magowan, Mrs. A., 2 Easton Crescent.
 1876. Major, Rev. J. J., Doagh.
 1905. Malcolm, Miss Susan, Downshire Road, Holywood.
 1899. Malcomson, J. G. B., Cairnburn, Strandtown.
 1901. Malcomson, Herbert T., M.B.O.U., 32 Arthur Street.
 1901. Malcomson, Joseph, 32 Arthur Street.
 1914. Manning, J. W., Slieve Donard Hotel, Newcastle.
 1880. Marsh, Mrs., Glenlyon, Holywood.
 1891. Marshall, H. C., Bryansburn Road, Bangor.
 1916. Masterson, Miss, 93 Wellesley Avenue.
 1915. Mawdsley, Miss, Macedon, Green Road, Knock.
 1892. Maxton, James, Ulster Street.
 1908. Maxwell, Henry, Dunalbine, Deramore Park.
 1893. May, Robert, 40 Hopefield Avenue.
 1919. Mayes, A. S., 23 Glandore Avenue.

1903. Mayne, H. Horner, 24 Elmwood Avenue.
 1917. Megaw, Rev. W. R., B.A., 1 North Parade.
 1920. Megaw, I. J., 26 Linenhall Street.
 1918. Merrifield, Jas., 105 The Mount.
 1918. Metcalfe, A. W., Hawthornden Road, Knock.
 1906. Millar, Thomas O., 306 Antrim Road.
 1907. Milligan, Miss, Lisnamaul, Ormeau Road.
 1915. Milligan, Arthur G., The Grange, Annadale.
 1920. Moderate, Mrs. 42 Irwin Avenue.
 1898. Montgomery, H. C., 40 Rosemary Street.
 1913. Montgomery, Miss E. S., 26 College Green.
 1911. Montgomery, Miss Jane E., 8 Sandhurst Road.
 1920. Montgomery, Miss S., 120 Eglantine Avenue.
 1920. Montgomery, Miss A., 120 Eglantine Avenue.
 1916. Moore, Frank, F.E.I.S., Home-Lyn, Marlborough Park N.
 1917. Morrison, Rev. Robert, B.A., The Curateage, Hillsborough.
1899. M'Bretney, W. A. J., 31 Haypark Avenue.
 1909. M'Cance, James, 302 Antrim Road.
 1913. M'Cance, Stoupe, 3 Markham Square, London, S.W.
 1919. M'Caw, T., Glenfield. Donegall Park.
 1884. M'Cleery, H., 7 Bedford Street.
 1912. M'Clelland, E. W., B.Sc., 79 Kansas Avenue.
 1879. M'Connell, James, J.P., Stranmillis House.
 1903. M'Connell, Miss, Stranmillis House.
 1905. M'Crum, Mrs., Ballyvesey, Carnmoney.
 1919. M'Donnell, Miss, 37 Rugby Avenue.
 1913. M'Dowell, Miss, 33 Botanic Avenue.
 1918. M'Dowell, R., Frontinac, Ravenhill Park.
 1914. M'Kay, Miss E. W., B.Sc., Ardbana Terrace, Coleraine.
 1904. M'Kean, Edward John, B.A., B.L., Rosaville, Fortwilliam Park.
 1920. M'Kee, Miss F. V., Ashleigh, Charnwood Avenue.
 1920. M'Kee, Miss Eva, Ashleigh, Charnwood Avenue.
 1906. M'Kinney, Miss, Sentry Hill, Carnmoney.
 1917. M'Iloy, R., 32 Pandora Street.
 1912. M'Meekin, Miss A. M., Sunnyside, Carnmoney.
 1917. M'Meekin, Adam, Cogry House, Doagh.
 O M'Millan, W., J.P., 30 Ashley Avenue.
1898. Orr, James, 17 Garfield Street.
- O Patterson, D. C., Glenard, Holywood:
1888. Patterson, Robert, F.L.S., M.R.I.A., M.B.O.U., Glenbank, Holywood
 1867. Pim, John, J.P., Bonaven, Antrim Road.
 1868. Pim, Thomas W., 21 Victoria Street.
 1869. Pim, Joshua, 6 Donegall Square South.
 1903. Pim, W. R., Lisnagarvey, Lisburn.

1903. Pooler, Rev. Chas. K., B.D., M.R.I.A., Carnbin, Whitehouse.
 1890. Porter, F. A., Queen's Square.
 1890. Porter, William, Beechview, Balmoral Avenue.
 1883. Praeger, R. Ll., B.A., B.E., M.R.I.A., National Library, Kildare Street, Dublin.
1901. Rankin, Will, 26 Derryvolgie Avenue.
 1904. Rankin, Mrs., 26 Derryvolgie Avenue.
 1907. Rea, Miss M. W., Salem House, Sydenham.
 1916. Rea, Miss L. C., Salem House, Sydenham.
 1919. Reilly, Geo. C., Greenholme, Carrickfergus.
 1907. Riddel, Mrs., Donegall Park Avenue.
 1903. Robb, H. M., 44 Ulsterville Avenue.
 1909. Russell, Nelson, Strathmore, Lisburn.
 1916. Rutledge, Miss Ethel J., M.Sc., 92 North Parade.
 1911. Ryves, Miss, 8 Stranmillis Gardens.
1899. Sandes, Robert, Chorlton, Adelaide Park.
 1913. Savage, W. E. J., Lincoln Avenue.
 1917. Sayers, Miss, B.A., Bartragh, Knock.
 1903. Sefton, Burton, St. Aubyn's, Deramore Drive.
 1918. Seymour, J., Inchmarlo, Marlborough Park.
 1911. Shaw, G. W., Ulster Bank, York Street.
 1905. Sheils, Rev. John F., Saintfield.
 1890. Skillen, Joseph, Largymore, Lisburn.
 1893. Stears, Samuel M., 6 Rosetta Avenue.
 1893. Steele, Miss, Dooneen, Marlborough Park.
 1910. Stelfox, Mrs. A. W., B.Sc., A.R.C.Sc.I., Mayfield, 14 Clareville Road, Rathgar, Dublin.
 1911. Stendall, J. A. Sidney, Municipal Museum.
 1904. Stephens, John Kyle, J.P., 13 Donegall Square North.
 1894. Stewart, W. J., Ormeau Road.
 1909. Stokes, W. J., Malone Park.
 1919. Strain, W., Windsor Park.
 1866. Swanston, William, F.G.S., Farm Hill, Dunmurry.
1871. Todd, John, J.P., Clarinda, Fortwilliam Park.
 1901. Tomlinson, W. J. C., 17 Glandore Gardens.
 1875. Traill, W. A., M.A. Ing., Bushmills.
 1904. Turtle, William Haydock, 1 Holyrood, Malone Road.
 1909. Turtle, Mrs. Herbert, Rosemount, Knock.
1894. Walsh, Robert, Ashestiel, Malone Road.
 1893. Walker, W. J. D., C.B., The Sycamores, Drogheda.
 1917. Walker, Franklin M., Mount Royal, Whitehead.
 1911. Ward, Miss K., Albertville, Sydenham.
 1919. Warnock, Mrs., Rugby Road.

- 1909. Watson, John G., The Maples, King's Road, Knock.
- 1905. Wear, Sylvanus, 19 Hopefield Avenue.
- 1880. Welch, Robert J., M.R.I.A., 49 Lonsdale Street.
- 1877. Whitla, Sir William, M.D., College Square North.
- 1917. Williamson, James, J.P., Sandown Park, Knock.
- 1893. Wilson, George, 17 Bedford Street.
- 1901. Wilson, Prof. Gregg, M.A., D.Sc., M.R.I.A., Queen's University.
- 1904. Wilson, Mrs., Ardenza, King's Road, Knock.
- O Workman, Rev. R., M.A., Crusheen, Cadogan Park.
- 1901. Workman, W. H., F.Z.S., M.B.O.U., Lismore, Windsor Avenue.
- 1867. Wright, Joseph, F.G.S., 10 May Street.

- 1914. Yapp, Prof. R. H., M.A., Queen's University.

Associate Members.

- 1915. Armstrong, Edward, Corlea, Somerton Road.

- 1914. Ferguson, Miss Olive, Glenfield Place, Ormeau Road.

- 1916. George, Alfred H., 22 Thorndale Avenue.
- 1917. Greeves, J. R. H., Altona, Strandtown.

- 1915. Mussen, Robert Walsh, Hillhall,
Princetown Road, Bangor.

- 1919. M'Bride, A., Ballinabough, Templepatrick.
- 1919. M'Kibben, Miss, Louisville, Knockdene Park.

- 1919. Roden, Miss N. N., Riddel Hall, Stranmillis.

- 1919. Smyth, Miss G., Fernhurst, Knockdene Park.

Junior Members.

- 1916. Bell, Miss Emma, Cressington, Rosetta Park.
- 1918. Bent, H. L., Lochlee, Kensington Road, Knock.

- 1916. Dawson, Brian, Baythorpe, Holywood.
- 1916. Deane, Archibald, Mount Nephin, Knockbreda.
- 1912. Deane, John, Mount Nephin, Knockbreda.
- 1913. Deane, Lindsay, Mount Nephin, Knockbreda.

1917. Ferguson, Miss Noreen, Glenfield Place, Ormeau Road.
1916. Gilmour, Humphrey, Knocknarea, Kensington Road.
1916. Gourlay, Jack, 18 Willowbank Street.
1917. Grainger, Charles, Craigavad.
1918. Harris, Norman, 109 Fitzroy Avenue.
1918. Macknight, John, 220 Springfield Road.
1915. Mayne, Miss Betty, 24 Elmwood Avenue.
1916. Morton, Walter E., 65 Ulsterville Avenue.
1918. M'Carthy, Miss Daisy, 4 Ardlee Terrace, Hollywood.
1918. M'Carthy, Desmond, 4 Ardlee Terrace, Hollywood.
1918. Quick, Geoffrey G., 17 Rossmore Avenue.
1918. Quick, Kenneth J., 17 Rossmore Avenue.
1916. Sloan, Miss Kathleen, Anneville, North Road.
1915. Stephenson, Miss Kathleen, 2 College Park East.
1915. Twadell, Miss Amy, Nashville, Malone Park.
1916. Young, Miss Carrie, Moyrusk, Marlborough Park.



BELFAST NATURALISTS' FIELD CLUB.

FIFTY-EIGHTH YEAR, 1920-21.

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Retire 1921.

Miss E. L. Andrews.
Robert Bell.
W. Faren.

Retire 1922.

W. C. Boyd.
A. R. Hogg.
R. May.

Retire 1923.

N. Carrothers.
T. W. Deans, LL.D.
D. Elliott, B.A.

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6 College Green,
Belfast.



Reduced Prices of Proceedings.

In accordance with resolution passed at General Meeting held on 28th April, 1911, the following reductions have been made in the prices of the Proceedings, &c., to Members of the Club. When the stock has been sufficiently reduced prices will be raised again.

Proceedings, without Appendices, Series II'. Vol. I. (1873-74 to 1879-80) to 2/6 per vol.

II. (1881-82 to 1886-87) to 2/6

„ „ „ „ „ III. (1887-88 to 1892-93) to 2/6 „

„ „ „ „ „ IV. (1893-94 to 1900-01) to 2/6 „

„ „ „ „ „ V. (1901-02 to 1906-07) to 2/6 „

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" " I.	...	In Paper Binding	...	to 3/6 "

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Flora of North-East Ireland, by Stewart and Corry, with Supplement. 2/6 per vol.

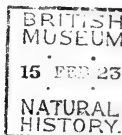
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NATURAL
HISTORY

Some of the above are now available to members at reduced prices.

ANNUAL REPORT

...AND...

PROCEEDINGS.



SERIES II.

VOL. VIII.

Part III.

1920-21.

For Contents See Back of Cover.



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ANNUAL REPORT AND PROCEEDINGS
OF THE
BELFAST NATURALISTS'
FIELD CLUB,

FOR THE YEAR ENDING 31st MARCH, 1921.

(FIFTY-EIGHTH YEAR.)

SERIES II.

VOLUME VIII.



PART III.

1920-21.

Joint Editors:

S. A. BENNETT, B.A., B.Sc.

A. M'I. CLELAND.

Belfast:

PRINTED AT THE "NORTHERN WHIG" OFFICE, VICTORIA STREET.

1921.







[D. J. Hogg.]

THE LATE SYLVANUS WEAR.

[Photo]

BELFAST NATURALISTS' FIELD CLUB.

FIFTY-EIGHTH YEAR, 1920-21.

GENERAL COMMITTEE.

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Vice-President :

REV. W. R. MEGAW, B.A.

Treasurer :

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WM. PORTER.

Hon. Sec. Geological Section :

A. R. DWERRYHOUSE, D.Sc., F.G.S., M.R.I.A.

Hon. Sec. Zoological Section :

J. A. S. STENDALL.

Hon. Sec. Archæological Section :

W. B. BURROWES.

Hon. Sec. Junior Section :

MISS S. BLACKWOOD.

Ordinary Members of Committee :

Retire 1921.

Miss E. L. Andrews.

Robert Bell.

W. Faren.

Retire 1922.

W. C. Boyd.

A. R. Hogg.

R. May.

Retire 1923.

N. Carrothers.

T. W. Deans, LL.D.

D. Elliott, B.A.

Hon. Secretaries :

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A. M^{rs}. CLELAND, GREEN ROAD, KNOCK, BELFAST.

Junior Section Committee :

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J. A. S. STENDALL.

MISS S. BLACKWOOD,

Hon. Sec. of the Section.

6 College Green,
Belfast.



Annual Report.

YOUR COMMITTEE has pleasure in submitting the Fifty-eighth Annual Report, as follows :—

During the year 39 Ordinary and 2 Junior Members have been elected ; 13 have resigned and 4 have died. The total membership on the 31st March, 1921, is therefore 326 as against 302 recorded in the last report, a gratifying increase of 24 members. The composition of the membership is now :—3 Honorary, 2 Corresponding, 2 Life, 310 Ordinary, and 9 Junior.

Your Committee greatly regret the decease during the year of the following Members :—1 Honorary and 3 Ordinary. A list of their names will be found at the end of the Report.

Special mention must be made of the great loss the Club has sustained through the lamented deaths of Canon H. W. Lett, M.A., M.R.I.A., and Mr. Sylvanus Wear. Both these esteemed Members were eminently known for their valuable work in connection with the subject of Botany, a branch of Natural Science in which the Club has done such excellent work. It is gratifying to reflect that their memories will be preserved in the forthcoming "Floral Supplement," to which reference will be made later.

Eleven Committee meetings have been held during the year, at which the attendances were as follows :—

S. A. Bennett	8	R. Bell	4
Rev. W. R. Megaw	6	W. Faren	3
S. M. Macoun	9	W. C. Boyd	6
S. Wear	1	A. R. Hogg	2
W. Porter	8	R. May	2
Dr. A. R. Derryhouse	3	N. Carrothers	11
J. A. S. Stendall	10	Dr. T. W. Deans	4
W. B. Burrowes	5	D. Elliott	7
Miss S. Blackwood	9	Mrs. Gibson	10
Miss E. L. Andrews	2	A. M'I. Cleland	10
D. Kennedy	4		

On the death of Mr. S. Wear, in November, 1920, the Committee co-opted Mr. D. Kennedy to the position of Hon. Librarian.

The programme of Summer Excursions was carried out in its entirety, the places visited and numbers present being as follows :—

Castle Dobbs	...	15th May	...	50 Present.
Divis Mountain	...	29th May	...	57 „
Newtownards	...	12th June	...	42 „
Killyleagh	...	26th June	...	32 „
Colin Glen	...	10th July	...	19 „
Port Muck	...	24th July	...	15 „
Conlig	...	7th August	...	15 „
Cloughfin	...	28th August	...	24 „
Lisburn	...	4th Sept.	...	25 „

Owing to the recent introduction of the Curfew Order it was decided to postpone the *Conversazione* till 1st March, on which date a most successful meeting was held in the Carlton Hall, 170 Members being present, the exhibits, as usual, proving most interesting and varied.

During the Winter Session the following papers were read, of which abstracts will be found in the Proceedings :—

1920.

November 16th—"The Descent, Distribution, and Methods of Dispersal of Water Plants," S. A. Bennett, B.A., B.Sc.

November 30th—"Rats: Their Habits and Economics," J. A. S. Stendall.

December 21st—"The Popular Study of Mosses," Rev. W. R. Megaw, B.A.

1921.

January 18th—"Frogs and Their Relatives," Prof. Gregg-Wilson, M.A., B.Sc., M.R.I.A.

February 1st—"The Pastor's Account Book," A. M¹I. Cleland.

February 15th—"Sea Birds," J. R. H. Greeves.

March 15th—"Lisburn in the Olden Days," Rev. Canon W. P. Carmody, M.A.

Floral Supplement.

The "Supplement to the Flora of North-East Ireland," the combined work of the Floral Sub-Committee appointed in 1916, is now in manuscript form and will shortly be in the hands of the printers. As this was a work in which Mr. Wear was very greatly interested, and indeed was engaged upon up to the time of his death, it is proposed to make the volume a memorial one to the memory of our late Hon. Librarian.

Your attention is drawn to the effort which is being made to raise the additional sum of £50 necessary to meet the increased cost of printing the "Supplement."

Delegation to British Association.

In June your Committee appointed Mr. A. M'I. Cleland Delegate to the British Association Meetings, in Cardiff, in the ensuing August. The subsequent report of the Delegate was submitted to the Club on 16th November, 1920, the first meeting of the Winter Session. The report may be briefly summarised in its concluding paragraph:—"Finally, the impression left upon my mind, after listening to the various speakers taking part in the discussions, was:—That the B.N.F.C. occupies a very satisfactory position among Field Clubs; that its activities are vigorous; its records good; the sum of its usefulness to local requirements great; and that, once the temporary financial strain has been removed, there is no reason why it should not continue for many years its honourable course of assistant to the study of Natural Science."

The Hon. Treasurer will lay before you his Statement of Accounts, which shows a balance in hand of £7 10s 11d.

The report of the Hon. Librarian will also be presented.

In conclusion, your Committee desire to tender their hearty thanks to:—Major A. R. Dobbs, R.G.A., of Castle Dobbs; Mrs. Higgins, of Rosganna; the Rt. Honourable Samuel and Mrs.

Cunningham, of Fernhill ; Mr. and Mrs. James Heron, of Tullyveery House, and Lieut.-Colonel Gawn R. Hamilton, J.P., D.L., of Killyleagh Castle ; and Mr. F. W. Walker, of Whitehead, for their kindness and hospitality extended to Members of the Club on the Summer Excursions ; to the Press for publishing reports of the Excursions and Meetings ; to the Superintendents of the Railway Companies, and to the Kindred Societies and Public Institutions who have favoured us with their publications.

Hon. Librarian's Report.

Since taking over the duties of the late Mr. Sylvanus Wear the work of the Library has followed an even course. The Library still continues to be of great use to the Members and is much resorted to by them.

D. KENNEDY, *Hon. Librarian.*

Deceased Members.

Mr. John Hamilton.

Rev. Canon H. W. Lett, M.A., M.R.I.A.

Mr. Thomas Pim.

Mr. Sylvanus Wear.

Dr.

Treasurer's Account for the Year ending 31st March, 1921.

Cr.

RECEIPTS.		PAYMENTS.	
To Balance	£9 1 1	By Printing of Proceedings	£27 6 3
" Subscriptions (278 O., 9 A.)	70 12 6	" Posting Do.	1 13 9
" New Life Member	4 4 0	" Printing Excursions and Meetings and Advertising	23 18 4
" Balance from Excursions	9 2 6	do.	6 0 7
Do.	0 1 3	" Addressing Envelopes, &c.	2 10 0
" Sales of "Flora," &c.	1 9 0	" Hire of Rooms for Meetings	5 7 0
" Refund	0 2 6	" Hire of Lantern for Meetings	4 10 0
		" Fire Insurance	0 10 0
		" Irish Naturalist	2 0 0
		" Gratuities	1 0 0
		" Expenses, British Association Delegate	3 3 0
		" New Certificate Book	2 19 9
		" Removal of Club's Effects from High Street	2 15 0
		" Carriage from Smithsonian Institute	0 12 11
		" Year's Expenses, Secretary	1 6 2
		Do. Treasurer	0 16 7
		" Other Postages & Sundries	0 12 7
		" Balance carried forward	7 10 11
	£94 12 10		£94 12 10

War Saving Certificates for £62 and £25 towards publishing a new "Flora of the North-East."

Examined and found correct by us.

S. M. MACOUN, *Hon. Treasurer.*

W. C. BOYD,	} <i>Hon. Auditors.</i>
DAVID KENNEDY,	

Proceedings.

SUMMER SESSION.

CASTLE DOBBS.

Date—15th May, 1920. Conductor—A. M^rI. Cleland. Number present, 50.

On reaching Kilroot Station a field path was taken to the old Church, associated with the earliest ministrations of Jonathan Swift, later and better known as Dean Swift of St. Patrick's, Dublin. The church has entirely disappeared, though the churchyard is still used for interments and contains an old stone font. Adjoining the churchyard are the ruins of the palace of the former Bishops of Connor; also two towers in earlier times used as pigeon-cotes or columbarias. In the front garden of the adjacent farm is to be seen part of a floriated cross, at one time covering an ancient tomb. At the rear of the farm, the centre of a scene of sylvan beauty, stands the "well" associated by legend with the foundation of the church by St. Columba in the 6th or 7th century, the well being in reality a small perpetually flowing stream.

From the old church the Members walked along the fine tree bordered avenue, formerly an approach from the main road, and thence to the demesne of Castle Dobbs, permission to visit which had been very kindly granted by Major A. R. Dobbs, R.G.A. Here the botanists were soon lost in the beautiful glen for which Castle Dobbs is so justly famous, all meeting in the drying-green of the Castle promptly at 5 p.m., where a most plentiful supply of hot water for tea-making had been thoughtfully provided by Major and Mrs. Dobbs.

From the Castle the party was led to Dolway's Bawn, the four-towered manor house formerly occupied by the Dolway family. Thence the route back to the station again entered the demesne, passing on the way a field in which many cowslips were found (one of its few stations in the North of Ireland), and following the winding ornamental paths of the upper portion of the glen.

At the business meeting following tea a vote of thanks was passed by acclamation to Major and Mrs. Dobbs and Mrs. Higgin of Rosganna, whose kindness had contributed so very largely to the afternoon's enjoyment.

The following botanical notes were made during the visit :— On walls at Kilroot churchyard : Thyme-leaved Sandwort (*Arenaria Serpyllifolia*) ; Wall cress (*Sisymbrium thalianum*). In Castle Dobbs demesne : Bird cherry (*Prunus padus*) ; Common columbine (*Aquilegia vulgaris*) ; Lesser periwinkle (*Vinca minor*) running wild ; Adder's-tongue (*Ophioglossum vulgatum*). In a field near the demesne : the Cowslip (*Primula veris*) in abundance.

DIVIS MOUNTAIN.

Date—29th May, 1920. Conductor—S. A. Bennett, B.A., B.Sc.

Number present, 57.

On reaching Wolfhill Village by special tramcar the route followed quickly led the party across the slopes of Wolf Hill to those of Divis Mountain, a slight halt being made at the former to enable the botanists to search for the Moonwort Fern (*Botrychium lunaria*), of which several specimens were secured.

A second halt was made a little farther on at a disused quarry in the basalt when some small pieces of the basaltic mineral *levine* were picked up.

The summit of Divis mountain (1567 feet) was reached by easy stages and, while the members rested, the Conductor gave a very interesting address on the chief objects of topographical and geological interest in the view spread out at their feet. In this

view Lough Neagh bulked very largely, its whole expanse being brilliantly illuminated by the low-lying sun. From Divis one gains a very fine idea of the magnificent expansion of the basaltic plateau of County Antrim, stretching out for miles from the base of Divis, and embracing not only the neighbouring bold escarpment of Cave Hill, but also such a distant solitary peak as the volcanic neck of Slemish Mountain, associated with the boyhood of St. Patrick.

Leaving the summit the party passed quickly down to the Monk's Hill road, whence a short half-hour's walk brought them to the hospitable doors of Fernhill, where the Rt. Hon. Samuel Cunningham and Mrs. Cunningham, with their entire family, had prepared tea for the members, entertaining them in so kindly a manner that its recollection will long remain a pleasant memory.

At the business meeting following tea, five new members were elected and a vote of thanks to Mr. and Mrs. Cunningham, proposed by A. M'I. Cleland, seconded by Dr. A. R. Dwerryhouse, was carried with enthusiasm.

The following botanical notes were made during the afternoon:—On the lower slopes of Divis Mountain—Moonwort (*Botrychium lunaria*); Lesser Twayblade (*Listera cordata*). On higher slopes—Crowberry (*Empetrum nigrum*) and Fir Clubmoss (*Lycopodium selago*). The Alpine Clubmoss (*Lycopodium alpinum*), which was found by Templeton on the summit was searched for but not met with. *Claytonia Sibirica* was seen at Fernhill.

The summit of Divis Mountain is interesting as affording a good example of the denudation of mountain peat.

NEWTOWNARDS.

Date—12th June, 1920. Conductor—R. May. Number present, 42.

On reaching Newtownards the first halt was made in the main street, where stands all that is left of the old town cross, the principal points of which were lucidly explained by the Conductor.

Thence the party passed on to the fine ruins of the ancient church of the Dominican Priory of St. Columba, erected in 1244, permission to visit the picturesque pile having been kindly granted by the Marquess of Londonderry.

A steep up-hill climb brought the Members to the site of the ancient Abbey of Movilla, founded originally by St. Finian about the year 540 A.D., the present ruins dating probably from the 15th century. The building measures 107 feet in length, the gables being almost intact, but the side wall much broken down. As the ruins are now under the control of the Board of Works their possession to Newtownards is well assured.

Some fine Anglo-Norman memorials are to be found here. They are in the form of tapered slabs of sandstone, bearing large crosses of varied design carved in relief. Some of them exhibit a sword, the symbol of a knight, whilst others have a shears, which signifies the grave of a lady.

From Movilla, after a most interesting address by the Conductor, an adjournment was made to the Queen's Cafe, where tea was served, after which, during the short business meeting following, three new members were elected.

During the afternoon Wall pellitory (*Parietaria officinalis*) was observed on the walls of the old abbey.

KILLYLEAGH.

Date—26th June, 1920. Conductor—Dr. T. M. Deans, LL.D.

Number present, 32.

The members journeyed to Comber, by the 10-35 a.m. train, en route for Clay Lake and Killyleagh Castle, the latter portion of the journey being made by motor char-a-banc.

The shores of the lower portion of the Lake were reached at noon, where lunch was at once partaken of. After this the majority of the members separated on botanical quests, whilst a select few were taken charge of by Mr. James Heron, J.P., of Tullyveery House, the proprietor of the greater portion of the

Lake, both upper and lower. A visit was first paid to the island in the middle of the lower Lake on which is a crannog in the form of a wall of dry built stones, somewhat elliptical in shape, where Mr. Heron has found several objects of archæological interest, now enshrined in his cabinet at Tullyveery House, and later shown to the members.

From the island the boat was pulled to the narrow 'strait' separating the upper from the lower Lake, across which a dam has been built, the boat having to be hauled over this obstruction by Mr. Heron and the Hon. Sec. Once more loaded up the party pulled round the beautiful reaches of the upper Lake, much more picturesque than those of the lower, the lights and shadows being exquisite, hardly a breath of wind blowing.

At 3 o'clock all the members assembled on the terrace of Tullyveery House, where they were the guests of Mr. and Mrs. Heron and family at afternoon tea. The terrace commands a splendid view of the surrounding country, both this and the ample fare provided being fully appreciated by the assembled company. After tea a vote of thanks, proposed by the Hon. Sec. and seconded by Rev. W. R. Megaw, was passed by acclamation, Mr. Heron (who has reached his 80th year), replying in a delightfully reminiscent manner.

Leaving Tullyveery House the members walked to the grounds and gardens of Killyleagh Castle, kindly placed at their disposal by Lieut.-Colonel Gawn R. Hamilton, J.P., D.L., who met the party and very courteously bade them welcome. At 6 p.m. all assembled in the Killyleagh Castle Lecture Hall, very kindly lent by Rev. James Craig, where hot water and crockery were available for tea making.

At the business meeting following three new members were elected, the char-a-bancs being mounted promptly at 7 p.m. for the return journey to Comber, the weather, excellent throughout the day, being at its very best, with bright sunshine and the whole landscape full of light and shade.

The following botanical observations were made during the day. In or near Clay Lake :—*Ranunculus peltatus*, White Water-lily (*Castalia alba*), Water Drop-wort (*Oenanthe thellandrium*), Creeping Cinque-foil (*Potentilla reptans*), Grey Field-speedwell (*Veronica polita*), *Catabrosa aquatica* and *Epilobium obscurum*, Black Horehound (*Ballota nigra*) was also seen by some of the party.

The chief find, however, was the Grey Sedge (*Carex divulsa*), growing in quantity near Tullyveery House, this find being made by the President (Mr. S. A. Bennett, B.A., B.Sc.).

COLIN GLEN.

Date—10th July, 1920. Conductor—S. A. Bennett, B.A., B.Sc.

Number present, 19.

The members journeyed by special tram car to Anderson's Town, en route for Colin Glen, permission to visit which having been kindly granted by Mr. J. Stoupe M'Cance.

Unfortunately the heavy rains of the previous two days had made access to the bed of the stream quite impracticable, to the great disappointment of the geologists of the party. The botanists fared better, several interesting finds being noted, though the state of the ground made collecting very difficult. On breaking out of the Glen the party was rewarded by a magnificent view of the Mourne as seen from the high ground above the head of the stream, with Carlingford Mountain and Slieve Gullion in the far distance.

At the business meeting, following a short halt for refreshments at the head of the Glen, four new members were elected.

PORT MUCK.

Date—24th July, 1920. Conductor—S. A. Bennett, B.A., B.Sc.

Number present, 15

The members journeyed to Larne Harbour by the 10-20 a.m. train, en route for Port Muck, Islandmagee, the weather being

excellent, with the exception of one or two showers, which latter merely served to emphasise the excellent views of Larne Lough obtained on the way. Good botanical work was done, all the members thoroughly enjoying the excursion.

Tea was served at the Coast-Guard Station, Port Muck, where a plentiful supply of hot water was available through the courtesy of Chief Petty Officer Mitchell.

Some of the members spent a considerable time at the interesting quarry in the interbasaltic beds at Ballylumford, at one time very extensively worked for iron by the late Dr. Ritchie.

CONLIG.

Date—7th August, 1920. Conductor—Rev. W. R. Megaw, B.A.
Number present, 15.

The party travelled by afternoon train to Newtownards, the objective being Conlig Hill. As the day was favoured with fine weather the botanists were soon hard at work, finding very interesting ground to explore and gathering a number of plants of special note. On the return journey to Newtownards the southern slopes of the hill were taken as the route.

Tea was served at Helen's Tower, the members afterwards ascending the tower and greatly enjoying the magnificent views of sea and land always available from that vantage point under the splendid climatic conditions prevailing on the day of their visit.

CLOGHFIN PORT.

Date—28th August, 1920. Conductor—Mr. R. Bell, F.G.S.
Number present, 24.

The members travelled to Ballycarry by the 2-15 p.m. train, the place selected for exploration being Cloghfin Port, on the eastern shore of Island Magee, and just north of Blackhead. A short walk across the island brought the members to Cloughfin Port, where, owing to the lowness of the tide, an admirable exposure of the cretaceous rocks of the district was visible along

the foreshore. Here the Conductor gave an interesting account of the beds and their contained fossils. Afterwards a good deal of fossil collecting was done, the softer strata of the Greensand formation yielding good specimens.

After satisfying their geological appetites, the members made their way round Blackhead, some on the low ground and some over the top by the lighthouse path. The botanists who took the former were delighted to see that the Sea Spleenwort still grows profusely on the inaccessible roofs of the sea-caves at Blackhead. After rounding the Head the members joined forces, and all walked back by the shore path to Whitehead, the botanists again noting some interesting plants by the way.

On arrival at Whitehead a pleasant surprise met the members, for here they were very hospitably entertained at "Mount Royal" by their respected fellow member Mr. Franklin M. Walker, who, aided by his daughter, was most assiduous in his kind attention to his guests. After tea, on the motion of the Conductor, seconded by Mr. S. M. Macoun, an enthusiastic vote of thanks was conveyed to their hosts by the members, who subsequently returned to town by the 8-15 p.m. train from Whitehead.

LISBURN.

Date—4th September, 1920. Conductor—Rev. W. P. Carmody, M.A.
Number present, 25.

On reaching Lisburn the party passed under the genial guidance of the Conductor, who first led them to the site of the old Castle, situated in Castle Park, and thence to the ancient "lis," or earth fort, close to the banks of the Lagan, around which the town originally grew. Adjourning to the Cathedral, the Conductor gave the members a very clear, graphic, and most interesting account of the history of the town, his remarks being listened to with great attention. After tea in the Parochial Hall, Canon Carmody showed his visitors the old Huguenot Bible,

brought to Lisburn by French immigrants on the revocation of the Edict of Nantes ; the ancient registers and parish records ; and the original charter of the Cathedral, dating from the reign of Charles II. After some appropriate remarks from the Hon. Secretary, voicing the members' appreciation of Canon Carmody's kindness, the proceedings terminated.



Winter Session.

NOTE.—*The authors of the various Papers of which abstracts are given, are solely responsible for the views expressed therein.*

THE DESCENT, DISTRIBUTION AND METHODS OF DISPERSAL OF WATER PLANTS.

The first ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 16th November, when the President (Mr. S. A. Bennett, B.A., B.Sc.) gave an address on the above subject.

Before the proceedings commenced feeling references were made to the recent death of Mr. Sylvanus Wear, a member of many years standing, and the Club's Librarian and Herbarium-Curator, a vote of condolence, proposed by the President and seconded by Mr. J. A. S. Stendall, being passed in the usual way.

The point of view emphasised by the President was that of the field botanist, who studied the plants as they grew in their natural surroundings, and his classification was based on points of resemblance and difference which would appeal to the naturalist.

Passing over the plants which grew in water without making any or only slight concessions to the medium in which they lived, he illustrated the chief stages in the passage from the life as it is lived by a plant on the land to one that was completely aquatic in its character.

In addition to the difficulty of obtaining an adequate oxygen supply there was the difficulty of raising the flowering spike out of the water into the surrounding air. It was vital to the existence of the plant that this difficulty should be overcome—and the

methods adopted by the plants in solving this problem afforded many instances of remarkably efficient adaptations to external conditions.

Touching on the question of the popular names given to our water plants he pointed out that nearly all of them contained a botanical error.

The luxuriant growth of water plants was discussed at length and a short resumé of the history of the spread of the Canadian Pondweed in the British Islands was given. This pest which had cost canal companies many thousands of pounds was first reported from Waringstown in 1836, a doubtful honour for County Down! The phenomena of heterophylly were discussed and the President pointed out that the different forms of leaf exhibited by one and the same plant could hardly be referred to the direct action of the environment, as both submerged leaves and floating leaves could already be distinguished in the young leaf-bud which was growing under water. The view was put forward that in future much more weight would have to be given to the part played by descent in the determination of leaf form and less stress laid on the ordinarily accepted theory of adaptation to external conditions. The fact that all water plants were widely distributed over the earth was known in pre-Darwinian times—our familiar Curly Pondweed (*Potamogeton crispus*) is found in temperate climates all over the world. Darwin attacked the problem of the world-wide distribution of water organisms on the following lines: he saw that existing methods of dispersal and particularly the part played by water birds constituted the main lines of research through which the solution was to be found and the President deplored the fact that so little had been discovered as to the inter-play of aquatic bird and plant life since Darwin's day. Willis's Age and Area Law which states that the area occupied by a species is in general dependent on the age of the species, reckoning the age of the species from the time of its arrival or evolution in the area concerned was put forward as an explanation of the restricted

distribution of the Autumnal Starwort (*Callitriche autumnalis*) in this country and the address closed with a review of some of the outstanding difficulties of the theory of Natural Selection as illustrated by the Bladderwort (*Utricularia*) and the evolution of the buoyant seed.

The address was fully illustrated by a fine series of lantern slides, and at its close was supplemented by some very interesting remarks by Professor Gregg Wilson, M.A., D.Sc., M.R.I.A.

The Hon. Secretary (Mr. A. M'I. Cleland) reported regarding the result of his correspondence with the members of Parliament for Belfast and Ulster on the subject of the proposed Plumage Bill, a subject in which the club is naturally greatly interested. The Hon. Secretary also presented his report as delegate to the British Association Meeting, held in Cardiff during August last.

RATS: THEIR HABITS AND ECONOMICS.

The first special meeting of the Winter Session was held in the Museum, on Tuesday, 30th November, when an interesting lecture was given on the above subject by Mr. J. A. S. Stendall, the President (S. A. Bennett, B.A., B.Sc.) in the chair.

After detailing the position of rats in the animal kingdom, and the characteristic features of the order they belong to, the lecturer gave a brief history of the introduction of the black rat and its more formidable cousin, the brown rat, into Great Britain; and stated that these two animals are without doubt the most highly organised members of their family and the most successful of mammals. An interesting point connected with the colour of these two animals was mentioned, it being stated that the so-called black rat is not always black, but consists of three distinct sub-species, the black rat proper, the Alexandrine rat, which is brownish-grey, and the tree or roof rat, which is reddish-brown. It was further stated that a black form of the brown rat has made its appearance in Ireland. This was first described

by Wm. Thompson in 1837 as the Irish rat—a distinct species—but which is now known to be a dark variety, and which is apparently increasing in numbers.

The many kinds of damage caused by rats was referred to, and their danger to man by being carriers of the rat flea, through the agency of which bubonic plague is transmitted. This, coupled with their destructive and offensive habits, marks them down as amongst our deadliest enemies.

The lecture was illustrated by numerous specimens, in the examination of which great interest was taken.

A short discussion followed in which the President, Mr. G. Reilly, and the Hon. Secretary took part.

THE POPULAR STUDY OF MOSSES.

The second ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 21st December, when a Paper on the above subject was read by the Rev. W. R. Megaw, B.A., the chair being occupied by the Hon. Sec. (Mr. A. M'I. Cleland) in the unavoidable absence of the President (Mr. S. A. Bennett, B.A., B.Sc.).

Before calling upon the lecturer, the chairman drew the attention of the members to the fund that is being raised to defray the cost of publication of the "Supplement" to the "Flora of North-East Ireland," a work that is being put out at the expense of the Club, and appealed for hearty support. Fifty pounds is needed, towards which eleven guineas has already been promised.

Mr. Megaw stated that his paper dealt with the limited interest taken in these plants compared with flowering plants and ferns. The average nature lover fights shy of the microscope, which is essential for moss study. Again, the absence of popular names is also a deterrent. But perhaps the chief cause of the neglect lies in the fact that moss plants do not attract the eye to the same degree as higher plants do; "a green haze" would best describe the average impression which mosses convey.

The lecturer then referred to the scanty references made by English poets to our moss flora.

Mosses may be gathered the year round, and one does not require to go far afield to obtain specimens. Reference was made to the numerous species to be found within the range of the penny tramway stage from the city centre.

The paper next dealt with the distribution in space of the plants under consideration. They are to be found in all situations and under every parallel of latitude. On the snow line of the Alps; amid the frost and fire of Tierra del Fuego; on the summits of the highest Sierras in Spain; on the Siberian tundras and North American "barrens" these hardy plants are found.

On account of the delicate cellular structure of mosses little is known of their distribution in time.

The economic value of mosses was next discussed. Directly they confer small benefit upon man—peat fuel being the chief.

The Esquimaux utilize a species of *Dicranum* for their lamp wicks; and Linnaeus describes a comfortable, portable mattress made of the interlacing tufts of common hairmoss.

Sphagna are employed as fodder by the Esquimaux in times of scarcity, as a covering for their newly-born infants by the Laplanders, and in the Great War the same mosses were extensively used as surgical dressings.

Mention was made of the use of moss by birds in nest-building, and of the shelter afforded to hosts of delicate insects from inclement weather.

In the general economy of nature mosses were shown as playing an all-important part. They prepare the soil required for sustaining the higher orders of plants, and also protect it from the effects of excessive evaporation.

In the binding of sand dunes mosses are to no small degree effective. The lecturer cited the case of *Tortula ruraliformis*, at Portstewart—a moss which grows buried to the head in the sand, acting as handmaid to the marram grass.

The lecturer claimed for mosses that they are more patient of investigation than plants belonging to the higher orders.

The reproduction of mosses was explained, and the term of existence of various species discussed.

Reference was made to the census catalogue of British mosses and to the valuable work done in this connection by the late Canon Lett and the late Rev. C. H. Waddell. A plea was made for renewed interest in the moss Flora of North-East Ireland.

The paper was illustrated by many interesting specimens of mosses, and after its conclusion a short discussion took place, in which Mr. J. A. S. Stendall, Miss Rae, and the Hon. Secretary took part.

FROGS AND THEIR RELATIVES.

The third ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 18th January, when a paper on the above subject was read by Professor Gregg-Wilson, M.A., D.Sc., M.R.I.A., O.B.E., the President (Mr. S. A. Bennett, B.A., B.Sc.) in the chair.

Before introducing the lecturer the President referred to the recent losses the Club had sustained in the deaths of Canon H. W. Lett, M.A., M.R.I.A., one of the greatest authorities on Irish mosses, and a member of forty-four years standing; of Mr. Pim, a well known entomologist and a member for fifty-two years, and of Mr. Hamilton, also a member of long standing.

The President also referred to the subscription that is being raised to defray the cost of printing the "Floral Supplement," a work which will rank high in the scientific literature of North-East Ireland.

Professor Gregg-Wilson then proceeded with his lecture and first described the haunts and habits of the common frog. He referred to the early life spent in water; to the later period when the frog wanders on the land, but always seeks for shade and damp conditions; and to the periodic return to the pond for

the purpose of spawning. He then gave a brief account of the characteristics of some of the relatives of the common frog, in particular the Edible Frog, the Toads, the Newts and Salamanders, and the Cœcilians. The interest of the group Amphibia was next considered, and it was pointed out that it is a transition group, partly adapted for water life, partly for life on the dry land. In many respects the adaptations to land life are far from perfect. On the other hand there are evidences that the Amphibia are eminently adaptable. They have not only invaded the surface of the earth, but some, such as the Cœcilia, burrow into it ; others, such as the Blind Olm, live in dark underground caverns. Many frogs have taken to arboreal life ; and one at least has developed a certain power of flight. Some Amphibia are able to live in the temperate zone owing to their habit of lying dormant all winter ; others are adapted to the dry conditions prevailing in Australia by their custom of burying themselves during the season of drought. Rather curiously a number of Amphibia act as if they had repented of the group effort to get to the land, for some show a retrograde tendency back to the water. The Axolotl is an example of this, as it regularly remains in the larval stage throughout life, though sometimes it changes to the land form, which is known as Amblystoma. The Siren seems to have gone even further, and is eel-like, with permanent gills, and in fact is practically a persistent larva.

The adaptability of the group is easily seen in individual systems of the body. The skin, for example, is most interesting, though in some ways it is poorly adapted for life in dry air. It is usually smooth and slimy, and the secretion from its glands not only does something to check drying up, but it also promotes breathing, which is largely effected through the general surface. Through the skin, too, water is absorbed, as drinking in the ordinary way is not a practice of the amphibian. Further, the skin shows a wonderful power of changing colour, and both protective and warning colours are beautifully exemplified.

Another series of adaptations is found in the nursing habits of Amphibia. In the simplest cases the eggs are dropped in a pond, and left to their fate; but sometimes the male carries them about for a time and only puts them into the water when they are nearly ready to hatch. In one case he actually carries them in his vocal sacs. Sometimes the female carries them about in a pouch or in the pockets of the spongy skin of her back. Sometimes the eggs are put in a nest in a tree. But the most striking of all modifications is where the eggs are retained in the oviducts and the larva not only develops there but passes through its whole metamorphosis, being fed on material derived from neighbouring eggs that have broken down.

The large amount of experimental work that has been done on developing frogs was next referred to, and it was shown that our present views of heredity have been largely influenced by such work.

The lecture was well illustrated by a very fine series of excellent lantern views, and at its close the President, in a few words, suitably conveyed to the lecturer the appreciation of the audience.

With the election of Mr. T. Edens Osborne and Mr. W. M. Crawford as members of the Club the proceedings terminated.

THE PASTOR'S ACCOUNT BOOK: 1768—1780.

The second special meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 1st February, when a paper on the above subject was read by the Hon. Secretary (Mr. A. M'I. Cleland), in which he gave an account of the ministrations of the Rev. Joshua Symonds, minister in the Old Meeting House, Bedford. This was John Bunyan's original pulpit, Symonds being third in succession from Bunyan.

The interest of the account Book lay in the fact that in it Joshua Symonds entered every item of income he received,

whether in money or in kind, many of the items in kind being exceedingly quaint. The book also records his disbursements to his poor, it being his habit to give away one-seventh of his income in charity, the proportion being increased later to one-sixth, and so continued for some years till a growing family compelled him with great reluctance to reduce it to one-tenth.

Among his correspondents were such men as John Howard, the prison philanthropist and reformer; John Newton, the friend of William Cowper, the poet and collaborator with Newton of the Olney hymns; various members of the Kingsley family, whose descendant, Charles Kingsley, was destined to make the Fen country so widely known in his "Hereward the Wake;" and also with the family of William Wilberforce, the slave emancipator.

The paper was much appreciated by the audience, being illustrated not only by the original account book but by many original and contemporary letters.

SEA BIRDS.

The fourth ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 15th February, when a paper on the above subject was read by Mr. J. R. H. Greeves, the President (Mr. S. A. Bennett, B.A., B.Sc.) in the chair.

The author opened his remarks by stating that as the scope of the subject, "Sea Birds," was somewhat large, he would confine his attention to the Auks (*Alcidæ*) and the Gulls and Terns (*Laridæ*). He mentioned that, though it might seem strange, at first sight, to group these birds together, yet structural characteristics determined the grouping, and pointed to a common ancestry, which the colouring of the young would indicate as being of the plover type, a fact also borne out by the shape of the eggs of such birds as the Guillemot, which is of the familiar pyriform type of the plover family; the shape having survived owing to the egg being laid on bare rock ledges subject to wind and likely to be thrown off by the bird in rising.

Dealing next with the various members of the Auk tribe, the Razorbill, Guillemot, Black Guillemot, Puffin and Little Auk were mentioned, the latter as an uncommon winter visitor, and the four former as species breeding freely in suitable localities round the coasts of Down and Antrim. The Terns were next mentioned, and of them, and of the Gulls a number of fine lantern slides was shown. The Sandwich Tern was mentioned as having been found breeding on a small island in Co. Down, and the Common and Arctic Terns as being numerous on Strangford Lough and Cope-land Islands, as well as other suitable places in the district. The Little Tern (*Sterna minuta*) was also noted as breeding sparingly.

On coming to the Gull family the author remarked that the Common Gull belied its name as it is by no means common in the district, and does not even breed; our commonest gull being the Black-Headed Gull or Laughing Gull (*Larus ridibundus*), which breeds on marshy ground and is easily distinguished by its brown head and red legs and bill. The Herring Gull (*L. argentatus*) was mentioned as another very common member of the family, breeding freely in Co. Antrim cliffs, and in Co. Down on a small island, while an inland breeding place is known on the Antrim Hills. The Lesser Black-Backed Gull is by no means so common on our coasts as the last-named, and plays the part of a tyrant and thief, stealing the eggs and young of other members of the tribe. The great Black-backed Gull, however, is the tyrant "par excellence" of the gull tribe and several notes of its strength were given. The author mentioned that, in company with Mr. H. T. Malcomson, another member of the Club, he had found the first recorded breeding place of the species in Co. Down, on a low island, in June, 1920, where there appeared to be two breeding pairs, though only one nest, containing three eggs, varying in length from 2'9" to 3'2" was found. In conclusion a number of rare stragglers, such as Bonaparte's Gull and Sabine's Gull, were mentioned.

In addition to lantern slides the paper was illustrated by a number of specimens of eggs of the various species from the author's own collection.

The paper was spoken to by Professor Gregg Wilson, Rev. W. R. Megaw, Mr. N. H. Foster, Mr. J. A. S. Stendall, and the President.

The meeting closed with the election of one new member of the Club and the announcement of details of the Annual *Conversazione*, to take place on Tuesday, 1st March.

CONVERSAZIONE.

The fifty-eighth Annual *Conversazione* and Exhibition was held on Tuesday, 1st March, when a company of 175 members and friends met in the Carlton Hall, at 6 p.m.

The following exhibits were shown :—

ZOOLOGY.—The Zoological exhibits included a demonstration of the method of determining the age of fishes by means of their scales and otoliths, by Professor Gregg-Wilson, M.A., D.Sc., M.R.I.A. ; cases showing trapdoor spiders, tarantula spiders, and Trinidad snails, by the Belfast Art Gallery and Museum ; eggs of the guillemot, showing variation in colour, by Mr. J. R. H. Greeves ; cases of Indian butterflies and Indian birds, by Mr. W. M. Crawford, B.A. ; exotic birds, by Mr. C. B. Horsbrugh ; gramophone records of songs of nightingale, blackbird and thrush, by Mr. T. Edens Osborne ; animal photographs, by Mr. E. Armstrong ; local moths, by Mr. H. Malcomson, who also exhibited a specimen of the "*Merveille du Jour*" moth, from Rostrevor, on lichen, showing protective resemblance.

BOTANY.—The Botanical exhibits included fresh water algae, by Miss M. W. Rea, B.Sc., showing macroscopical and microscopical examples of myxophyceae, peridiniaceae, bacillaricae, and chlorophyceae ; local mosses living and the same mosses as museum specimens, by Mr. W. Porter and Rev. W. R. Megaw ; the toothwort parasitic on the hawthorn and a collection of local

plants, by Mr. N. Carrothers : local mycetozoa, by the Belfast Art Gallery and Museum ; plants recently collected from Co. Antrim, including *Carex irrigua* and *Carex filiformis*, by Mr. R. Ll. Praeger, B.A., B.E., M.R.I.A. ; encrusted saxifrages and a form of scaly spleenwort, by Mr. W. Porter ; fungoid diseases of plants, by the Belfast Art Gallery and Museum ; *Carex divulsa* from its three stations in Co. Down, and pond weeds of Co. Antrim and Co. Down, with distribution maps, by the President (Mr. S. A. Bennett, B.A., B.Sc.) ; some sphagnum of the British Isles, by Mr. J. Glover ; types of local mosses in fruit, by Rev. W. R. Megaw ; the Brazil nut (*Bertholletia excelsa*) of commerce, and the artichoke (*Cynara Scolymus*) in flower, by Mr. N. Carrothers ; sunflower (*Helianthus*) showing reversal of geotropic curvature in an atmosphere of carbonic acid gas, by Miss M. T. Lynn, B.Sc.

GEOLOGY.—The Geological exhibits included trilobites (*Phacops caudatus*) from the Upper Silurian of Shropshire, by Mr. and Mrs. A. M'I. Cleland ; *Nautilus striatus* (Sow.) whole and in section, and *Ammonites bucklandia* (Sow.) from the Lias beds at Barney's Point ; *Nautilus largilliertianus* (Sow.) and *Pleurotomaria perspectiva* (M.) from the Upper Chalk beds at Carmean, Co. Derry, and an example of recent nautilus shell by Mr. R. Bell, F.G.S. ; set of sections of igneous rocks, showing certain structures exhibited by means of microscopes, by Dr. A. R. Derryhouse, D.Sc., F.G.S., M.R.I.A., and Miss D. Reynolds, B.Sc.

ARCHÆOLOGY.—The Archæology exhibits included a fine collection of early pottery and encaustic tiles, by Mr. H. C. Lawlor ; fragments of neolithic pottery from Whitepark Bay, Co. Antrim, by Mrs. A. Metcalfe ; sections of wooden pipes formerly used for Belfast water supply, Mr. A. M'I. Cleland ; brass snake of Indian workmanship, by Mr. W. M. Crawford, B.A. ; early book on botany, with hand coloured plates, and examples of early envelopes, by Miss Mawdsley.

After a few remarks by the President and the election of three new members tea was served in the Restaurant, at 8-15 p.m., and a very pleasant evening thus brought to a close.

LISBURN PAST AND PRESENT.

The fifth, and concluding, ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 15th March, when a Paper on the above subject was read by Rev. Canon W. P. Carmody, M.A., the President (Mr. S. A. Bennett, B.A., B.Sc.) in the chair.

The author stated that the history of Lisburn, if we are to deal with facts, must begin at the period of the Ulster Plantation. Previous to that time there was a Village or Fort on the Lagan called Lisnagarvey. There is a townland of Lisnagarvey in which the greater part of the modern town is built—this townland contains the site of more than one fort. In the townland of Blaris, on the east side of Hill Street, there is the site of a very extensive fort which, from its position and the strength of its ramparts, always seems to have been the chief centre of the strongholds that guarded the S.E. part of the manor of Kilultagh.

This manor of Kilultagh, which is practically identical with the Barony of Upper Massareene, comprises the territory between the Lagan and Lough Neagh, and was part of the possessions of the O'Neill's. When Shane O'Neill was attainted in 1569, Kilultagh was escheated to the Queen, and after more than one attempt had been made to colonise it by English and Scottish settlers it passed, in 1609, into the hands of Sir Fulke Conway, and with him the history of Lisburn begins. He erected a castle and round the castle the town grew; he brought with him settlers from England and Wales—some of their descendants are in Lisburn to-day.

The old town consisted of three streets which to-day are represented by Castle Street, Bow Street, and Bridge Street. One wall of the castle still remains, with its ancient gateway, also the earthwork fortifications, the ramparts, some of the outward

walls and the gardens and bowling green. He also built a church, in 1623, which seems to have been originally intended for a private chapel, called St. Thomas's church, but which afterwards became, by a charter of King Charles II., what it is to-day, the Cathedral of Down and Connor.

During the stormy period of the last years of the 17th century Lisburn, being on the road connecting Carrickfergus with the South, must have witnessed many stirring scenes. In 1689, Schomberg, returning from Dundalk and Newry, spent four months there, and the Burial Register of the Cathedral shows that during that period there was terrible mortality in the ranks of the soldiers. On the 19th June, 1690, King William III. passed through Lisburn on his way to the Boyne—there are still several traditions about his resting-place.

When peace was restored Lisburn became the home of many of the Hugenots and their presence brought a great impetus to the linen industry, of which it still remains one of the centres.

Lisburn has had many misfortunes but it has survived them all by the industry and loyalty of its inhabitants. In 1641 a determined attack was made upon the town by the rebels, but they were repulsed and signally defeated by Sir George Rawdon—though the town itself was set on fire. There was another great fire in 1707. This time it was accidental, but the Cathedral and Castle were burned—though after each fire new and better houses and streets were built, and the industries progressed with wonderful rapidity.

The lecturer referred to many well known persons connected with Lisburn. Amongst them Bishop Jeremy Taylor, Sir George Rawdon, Betty, the famous boy actor, Henry Monro, General John Nicholson, and Sir Richard Wallace.

In the subsequent discussion the following took part:—The President, Mr. J. Skillen, Mr. R. S. Lepper, M.A.; and the Hon. Secretary. After the President, in well chosen phrases, had suitably voiced the appreciation of the audience for an excellent lecture, the proceedings closed with the election of five members.

ANNUAL MEETING.

The Annual Meeting was held in the Museum, College Sq. N., on Tuesday, 19th April, at 8-p.m., the Vice-President (Rev. W. R. Megaw, M.A.) in the chair, there being a good attendance of members.

The Annual Report, Treasurer's Statement, and Librarian's Report having been read it was proposed by Mr. J. A. S. Stendall, seconded by Mr. D. Elliott, and resolved that these Reports be adopted, printed and circulated as usual.

The election of Office-bearers for 1921-22 was then proceeded with, the following selections being made:—President: Mr. S. A. Bennett, B.A., B.Sc.; Vice-President: Rev. W. R. Megaw, B.A.; Hon. Librarian: Mr. D. Kennedy; Hon. Treasurer: Mr. T. Edens Osborne; Hon. Secretary: Mr. A. M'I. Cleland; Hon. Sec. for Geology: Mr. R. Bell, F.G.S.; Hon. Sec. for Botany: Mr. Wm. Porter; Hon. Sec. for Zoology: Mr. J. A. S. Stendall, M.B.O.U.; Hon. Sec. for Junior Section: Mr. J. R. H. Greeves. Ordinary Members of Committee, to retire in 1924: Dr. A. R. Dwerryhouse, D.Sc., F.G.S., M.R.I.A.; Mr. S. M. Macoun and Mr. W. M. Crawford.

Mr. J. A. S. Stendall proposed and Mr. T. E. Osborne seconded, that the members tender their best thanks to Mr. S. M. Macoun for his efficient work as the Club's Treasurer during the past three years, the motion being carried by acclamation.

The Vice-President offered Mr. J. A. S. Stendall the congratulations of the members on his recent election to the British Ornithological Union, Mr. Stendall making a suitable reply.

It was proposed by Dr. A. R. Dwerryhouse, seconded by Mr. A. M'I. Cleland, and carried unanimously, that the following be elected Honorary Members:—Mr. Wm. Swanston, F.G.S., and Mr. Joseph Wright, F.G.S.

The proceedings then terminated with the election of 41 new members, a result mainly due to the energy of the newly appointed Hon. Treasurer, Mr. T. E. Osborne.

RULES

OF THE

Belfast Naturalists' Field Club.

As amended at General Meeting held 20th April, 1920.

I.

That the Society be called "THE BELFAST NATURALISTS' FIELD CLUB."

II.

That the object of this Society be the practical study of Natural Science and Archaeology in Ireland.

III.

That the Club shall consist of Ordinary, Junior, Life, Corresponding and Honorary Members. The Ordinary Members shall be proposed and seconded at any ordinary meeting of the Club, and such members may be elected at the next ordinary meeting following, by a majority of votes, provided that in the meantime the first Annual Subscription has been paid. They shall pay annually a subscription of Five Shillings. Members who are twelve months in arrear in their subscriptions shall not receive any further circulars or other printed matter.

That the composition fee for Life Membership be Four Guineas.

Junior Members, who must be between the ages of 12 and 21, shall be elected in the same way as Ordinary Members, but shall pay annually a subscription of One Shilling (1/-) from 12 years of age to 18, and a subscription of Two Shillings and Sixpence (2/6) from 18 years of age to 21. Junior Members shall not receive any printed matter except the usual notices; shall not have the power to vote; and shall not borrow books from the Club's Library without special permission from the Librarian. On attaining their majority they shall become Ordinary Members, and shall pay an annual subscription of Five Shillings (5/-).

IV.

That the Honorary and Corresponding Members shall consist of persons of eminence in Natural Science, or who shall have done some special service to the Club; that such Members may be nominated by any Member of the Club, and on being approved by the Committee, may be elected at any subsequent Meeting of the Club by a majority of the votes of the Members present. That Corresponding Members be expected to communicate a paper once within every two years.

V.

That the Officers of the Club be annually elected and consist of a President, Vice-President, Treasurer, Librarian, and one or two Secretaries, together with the Secretaries of the various Sections of the Club. That the office of President or that of Vice-President shall not be held by the same person for more than two years in succession.

VI.

That the General Committee shall consist of the above-named officers with nine ordinary members of Committee, and shall hold at least eight meetings during the year; five persons to form a quorum.

That three ordinary members of Committee shall retire annually in order of seniority, those retiring being ineligible for re-election for one year. Should any ordinary member of Committee fail to attend at least three of the Committee meetings held during the year his or her place may be considered vacant and another member elected to fill the position. No ordinary member of Committee shall hold the post of Secretary in any of the Sections. That in the event of a vacancy occurring in the General Committee a new member may be co-opted to fill such vacancy for the remainder of the year.

That nominations for ordinary members of Committee shall be sent in writing to the Secretaries on or before the 21st day of March in each year. That the privilege of nominating members of Committee shall be held by all Ordinary and Life Members of the Club. That the names of those members so nominated shall be published on the circular convening the Annual Meeting, at which the Ordinary Members of Committee shall be elected by ballot. That should the necessity arise the retiring members of Committee shall be balloted for.

VII.

The Committee may from year to year appoint Sectional Secretaries and Committees, as may be considered desirable, to further original investigations in any one or more departments of the Club's work. No financial responsibility to be incurred by any Sectional Secretary, Sectional Committee, or any Officer of the Club without the previous approval of the Club's Committee. The Junior Section to have a Committee composed of Six Members of the Club, the Chairman to be annually appointed by the General Committee.

VIII.

That the members of the Club shall hold at least Six Field Meetings during the year, in the most interesting localities, for investigating the Natural History and Archaeology of Ireland. That the place of meeting be fixed by the Committee, and that five days' notice of each Excursion be communicated to Members by the Secretaries. That each of the Sectional Secretaries shall be made responsible for the running of one Regular Excursion, the programme to provide study in the subject appertaining to the Section, and that any additional Special Excursions shall be arranged by the Secretaries of the Sections concerned.

IX.

That regular Monthly Meetings be held during the Winter Session from November till April, inclusive, for the purpose of reading Papers; such Papers as far as possible to be original, and to treat of the Natural History and Archaeology of the district. That the Papers to be read be secured by a Standing Organising Committee, consisting of the Hon. Secs. of the Club, together with the Sectional Secretaries and a Chairman. That between the Regular Monthly Meetings of the Club Special Meetings open to all Members of the Club may be held, at which Papers of specialised interest would be discussed. That the Sectional Secretaries shall each be responsible for the providing of a programme for one Regular and one Special Meeting, one Regular and one Special Meeting to be arranged by the Hon. Secs. Any extra Meetings shall be arranged by the Organising Committee, if desired. That the programme for the Winter Session shall be completed by the date of its First Meeting and issued to all Members. That each notification announcing a Regular Meeting or Excursion shall also serve to notify Members of the next Special Meeting or Excursion.

X.

That the Committee shall, if they find it advisable, offer for competition Prizes for the best collections of scientific objects of the district; and the Committee may order the purchase of maps, or other scientific apparatus, and may carry on geological and archaeological searches or excavations, if deemed advisable, provided that the entire amount expended under this rule does not exceed the sum of £10 in any one year.

That the General Committee may offer from time to time such prize or prizes as they may deem desirable for competition among Schools in or near Belfast.

XI.

That the Annual Meeting be held during the month of April, when the Report of the Committee for the past year, and the Treasurer's Financial Statement shall be presented, the Committee and Officers elected, Bye-laws made and altered, and any proposed alterations in the general laws, of which a fortnight's notice shall have been given, in writing, to the Secretary or Secretaries, considered and decided upon. The Secretaries to give the Members due notice of each intended alteration.

XII.

Members of other Irish Field Clubs, residing temporarily or permanently in or near Belfast, may be enrolled as Members of the Club without election or entrance fee on production of a voucher of membership of another Club, and without subscription for the current year, on production of a receipt showing that such subscription has been paid to another Club. Failing the production of such receipt, the usual subscription for the current year to be paid to the Treasurer on enrolment. The names of Members so admitted to the Club to be published with the notice of meeting following the date of their enrolment

XIII.

That, on the written requisition of twenty-five Members, delivered to the Secretaries, an Extraordinary General Meeting may be called, to consider and decide upon the subject mentioned in such written requisition.

XIV.

That the Committee may be empowered to exchange publications and reports, and to extend the privilege of attending the Meetings and Excursions of the Belfast Naturalists' Field Club to Members of kindred societies, on similar privileges being accorded to its Members by such other societies.

RULES FOR THE CONDUCTING OF EXCURSIONS.

I. The excursion to be open to all Members, each one to have the privilege of introducing two friends. The time for commencing as many as possible of the Half-Day Summer Excursions to be not prior to 2 p.m.

II. A Chairman to be elected as at ordinary meetings.

III. One of the Secretaries to act as Conductor, or, in the absence of both, a Member to be elected for that purpose.

IV. No change to be made in the programme, or extra expense incurred, except by the consent of the majority of the Members present.

V. No fees, gratuities, or other expenses to be paid except through the Conductor.

VI. Every Member or Visitor to have the accommodation assigned by the Conductor. Where accommodation is limited, consideration will be given to priority of application.

VII. Accommodation cannot be promised unless tickets are obtained before the time mentioned in the special circular.

VIII. Those who attend an excursion without previous notice will be liable to extra charge, if extra cost is incurred thereby.

IX. No intoxicating liquors to be provided at the expense of the Club.

Exchange of Proceedings, 1920=21.

Birmingham—Natural History and Phil. Society.

Proceedings, Vol. XIV., Part 3. List of Members.

Bournemouth—Natural Science Society.

Proceedings, Vol. X. (1917-18).

Brighton and Hove—Natural History and Phil. Society.

Annual Report for 1917-18.

Bristol—Naturalists' Society.

Proceedings, 4th Series, Vol. V., Part 1.

Canadian Institute.

Transactions, Vol. XII., Part 1.

Chester Society of Natural Science, Lit. and Art.

47th and 48th Annual Reports.

Dublin—Royal Irish Academy.

Proceedings, Vol. XXXIV., Sec. B., Nos. 7, (8, 9, 10), 11, (12, 13),

" " " Sec. C., Nos. (10, 11).

" " XXXV., Sec. B., Nos. 1, 2.

" " " Sec. C., Nos. (2, 3, 4), 5, 6.

Title page and Contents, Vol. XXXIV.

Dublin—Royal Society of Antiquaries of Ireland.

Journal, Vol. XLVIII., Part 2; Vol. XLIX., Part 1.

Dumfriesshire and Galloway—Nat. Hist. and Antiquarian Society

Transactions, Series III., Vol. VI.

Eastbourne—Natural History, Phot. and Lit. Society.

Transactions and Journal, Vol. VIII., Nos. 24-25.

Essex—Field Club.

Journal of Proceedings, Vol. IV., Part 2.

Essex Naturalist, Vol. I., Nos. 5 to 12; Vols. II. to IX.; and
XI. to XVII.

" Vol. XVIII., Nos. (1-6); Vol. XIX., Nos. 1, 2.

Hamilton—Association.

Journal and Proceedings, No. 29 (1912-13 to 1917-18).

Hull—Scientific and Field Naturalists' Club.

Transactions, Vol. IV., Part 6.

Leyden—Rijks Ethnographisch Museum.

Report for 1917-18.

London—British Association.

Annual Report for 1918.

,, British Museum (N.H.).

Guide to British Fresh Water Fishes.

,, The Structure of Animals in Relation to Flight.

Special Guide, Insects and their spreading of Disease.

Instructions for Collectors, Nos. 1A and 13.

Economic Series, Nos. 2 to 8.

,, Geologists' Association.

Proceedings, Vol. XXX., Parts 1, 2, 3, 4.

,, Vol. XXXI., Part 1.

,, Linnean Society—

Proceedings of 131st Session (Nov. 1918 to June 1919), List of
Members 1919-20.

Manchester—Microscopical Society.

Annual Report for 1918.

Marlborough—College Natural History Society.

Report, No. 67 (1918-19)

North Staffordshire—Field Club.

Transactions Vol. LIII. (1918-19).

Norwich—Prehistoric Society of East Anglia.

Proceedings, Vol. III., Part 1 (1918-19).

Perthshire—Society of Natural Science.

Trans. and Proc., Vol. VI., Part 5 (1917-18); Vol. VII.,
Part 1 (1918-19).

U.S.A.—Californian Academy of Sciences.

Proceedings, 4th Series, Vol. VIII., Nos. 5, 6, 7. Index to
Vol. VII. (4th Series).

,, Cincinnati—Lloyd's Library.

Mycological Notes, Nos. 39 to 47.

Synopsis of the Stipitate Stereums.

,, ,, Genus Cladorderris.

U.S.A.—Medford, Mass.—Tuft's College Studies.

Scientific Series, Vol. IV., Nos. 7 & 8; Vol. V., No. 1.

,, Milwaukee, City of—Public Museum.

Bulletin, Vol. III., No. 1.

,, Missouri—Botanical Garden.

Bulletin, Vol. VII., Nos. 3 to 10; Vol. VIII., Nos. 1, 2.

,, New York—Academy of Sciences.

Annals, Vol. XXVIII., pp. (1-50); (51-166). Index, Vol. XXVII.

,, Philadelphia—Academy of Natural Sciences.

Proceedings, Vol. LXX., Part 3; Vol. LXXI., Part 1.

,, Washington—Geological Survey.

Bulletins, 664, 668, 669, 676-678, 683, 685, 687, 688, 690 (Part 1).

691 (E, F, K, L, M), 693, 710 (A, B), 711 (A, B).

Water Supply Papers, 411, 422, 427, 429, 446, 457, 485.

Professional Papers, 104, 107, 109, 110, 112-114, 120 (L.) 125 (A, B).

Mineral Resources, 1916, Part I., Nos. 24 to 27, and A.

,, ,, 1917, Part I., Nos. 11 to 22; Part II., Nos.
23 to 34.,, ,, 1918, Part I., Nos. 1 to 4; Part II., Nos. 1
to 11, and Preliminary Report.

,, Washington—Government Printing Works.

Museum Report for 1917-18.



List of Members.

Any change in the Address of Members should be at once notified to the Secretaries by Post Card.

The Dates prefixed to Members' names signify date of Election.
O stands for an Original Member who signed the requisition for the formation of the Club in 1863.

Hon. Members.

- O Donaldson, George, 1 Prospect Street.
O Phillips, Wm. H., Lemonfield, Holywood.
1902. Scharff, Robert F., B.Sc., Ph.D., F.L.S., M.R.I.A., National Museum, Kildare Street, Dublin.

Corresponding Members.

- O Holden, J. S., M.D., Sudbury, Suffolk.
1914. Charlesworth, John K., M.Sc., Ph.D., F.G.S., Geological Dept., University, Manchester.

Life Members.

1903. Stelfox, A. W., A.R.I.B.A., M.R.I.A., Mayfield, 14 Clareville Road, Rathgar, Dublin.
1893. Wilson, Alec G., J.P., M.R.I.A., Belvoir Park.
1893. Woolcombe, Robt. Lloyd, M.A., LL.D. (Dublin University), F.I. Inst., F.R.C.Inst., F.R.G.S., F.R.E.S., F.S.S., M.R.I.A., 14 Waterloo Road, Dublin.

Ordinary Members.

1918. Adams, Miss A. M., Rosemount, Malone Road.
1907. Adams, Rev. W. A., B.A., Antrim.
1915. Aird, Hugh, 16 Fitzwilliam Avenue.
1917. Alderdice, Richard S., 12 Linenhall Street.
1866. Anderson, Sir Robert, Bart., J.P., Donegall Place.
1911. Anderson, Miss Sarah, 4 Church View, Holywood.
1882. Andrew, J. J., L.D.S., University Square.
1892. Andrews, Miss E., 12 College Gardens.
1912. Andrews, Miss E. L., Inla, Comber.
1911. Andrews, Miss M. A., 50, Eglantine Avenue.
1912. Andrews, Dr. Marion B., 17, University Square.
1913. Andrews, Michael C., 17, University Square.
1916. Armstrong, Miss Dorothy, Corlea, Somerton Road.
1916. Baillie, Robert, Elleslie, Ravenhill Park.
1907. Baillie, W. T., Marathon, Green Road, Knock.
1901. Barrett, J. H. Farnham Road, Bangor.
1915. Beattie, John Carson, Deaf and Dumb Institution, Lisburn Rd
1905. Beck, Miss, 1, Derryvolgie Avenue.
1913. Bell, D. M., Carragh Ard Lodge, Newcastle, Co. Down.
1896. Bell, E. George, Solitude, Lurgan.
1893. Bell, Robert, 64, Newington Avenue.
1917. Bell, Miss Janet M., Daisybank, Holywood.
1909. Bennett, Edward, Forth River Mill.

1908. Bennett, S. A., B.A., B.Sc., Campbell College.
 1894. Bigger, Francis J., M.R.I.A., Ardriagh, Antrim Road
 1914. Bird, Miss, 18, Connaught Mansions, Prince of Wales Road, Battersea, S.W.11.
 1916. Black, S. C., 15, College Gardens.
 1895. Blackwood, Miss S., 6, College Green.
 1920. Blair-Dale, Mrs. Lily, 2, Eglantine Place.
 1921. Blair, Mrs. J., 14, Cliftonville Avenue.
 Boughton, E., 10, Eia Street.
 1921. Bowman, Miss A., 1, Rossmore Avenue.
 1893. Boyd, Miss, Chatsworth, Malone Road.
 1894. Boyd, W. C., J.P., Hazelbank Villa, Ravenscroft Avenue.
 1916. Bradley, Miss L. I., Haypark House, Knock.
 1917. Bradley, Mrs., Haypark House, Knock.
 1883. Brandon, Hugh B., J.P., 2, Wellington Place.
 1863. Brett, Sir Charles H., Gretton Villa South.
 1883. Brown, Thomas, J.P., 102, Donegall Street.
 1911. Browne, G. B., 356, Ormeau Road.
 1876. Bulla, Charles, 272, Lisburn Road.
 1899. Burrowes, W. B., Ballynafeigh House.
 1918. Byrne, Mrs., 24, College Square North.
 1903. Campbell, D. C., J.P., M.B.O.U., Templemore Park, London-derry.
 1909. Campbell, John, Albert Brickworks, Carrickfergus.
 1917. Campbell, James, Jennymount Mill, Belfast.
 1891. Capper, J. Malcolm, 14, Linenhall Street.
 1904. Carmody, Rev. Canon W. P., Lisburn.
 1892. Carrothers, Nathaniel, 145, Stranmillis Road.
 1892. Carson, J. C., 8, Wellington Place.
 1917. Carson, James, Parkmount, Lisburn.
 1914. Carter, C. S., 25, Donegall Street.
 1907. Chambers, W., 35, Cranmore Avenue.
 1920. Chandler, W. P., Ravenhill Gardens.
 1920. Chandler, Mrs. W. P., Ravenhill Gardens.
 1919. Chase, Capt. C. D., M.A., Campbell College.
 1901. Cheyne, H. H., Roseneath, Bangor.
 1920. Churchill, Miss, Inverary, Strandtown.
 1894. Cleland, Alex. M'L., Macedon, Green Road, Knock.
 1894. Cleland, Mrs. Annie, Macedon, Green Road, Knock.
 1890. Cleland, James A., Bernagh West, Malone Park.
 1917. Close, R. M., 13 Donegall Square North.
 1904. Cocking, Miss C. E., 19 Glebe Road, Huddersfield.
 1914. Corrigan, Chas., 133 Royal Avenue.
 1906. Cowie, James, Midland Railway Co.
 1921. Crawford, W. M., Orissa, Marlborough Park.
 1913. Cunningham, Miss M. E., Glencairn, Belfast.
 1884. Cunningham, Rt. Hon. Samuel, Fernhill.
 1915. Cunningham, Josias, M.B.O.U., Fernhill, Belfast.
 1916. Davis, Miss E. C., Lauraville, Balmoral.
 1915. Denby, Miss Alice M., Evetide, Westland Gardens
 1891. D'Evelyn, Alex. J., M.D., Ballymena.
 1915. Dick, Miss M. E., M.A., Wynstay, Rosetta Park.
 1919. Deans, T. M., D.D., Academy House, Rosetta.
 1907. Doran, John, J.P., Dunottar, Malone Road.
 1909. Drummond, Miss Ina, 39 Atlantic Avenue.
 1916. Duffin, Miss Mabel W., B.Sc., Rokeby, Deramore Park.
 1908. Duncan, William, 24 Queen Street.
 1912. Dundee, Miss B., Eglantine Avenue.
 1909. Dwerrihouse, Major A. R., D.Sc., F.G.S., M.R.I.A., Queen's University.

1916. Edwards, Herbert, 54 Ulsterville Avenue
1916. Edwards, Mrs., 54 Ulsterville Avenue.
1884. Elliott, David, B.A., J.P., Ardree, Bloomfield
1868. Faren, W., 11 Mountcharles.
1912. Ferguson, Mrs., St. Helen's, Holland Park, Knock.
1913. Ferguson, Samuel, St. Helen's, Holland Park, Knock.
1918. Fildes, H., 20 Wilmont Terrace, Lisburn Road.
1897. Finlay, Miss, St. Hilda's East, 3 Old Nichol Street, Bethnal Green, London.
1906. Finlay, Arch. H., Willesden, Holywood.
1899. Foster, Nevin H., F.L.S., M.R.I.A., M.B.O.U., Hillsborough.
1903. Foster, Mrs. N. H., Hillsborough.
1911. Foster, Miss A. B., B.Sc., Y.W.C.A., William Street, Waterford.
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1918. Gourlay, Mrs. J., 18 Willowbank Street.
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1895. Green, Wm. A., 4 Salisbury Terrace, Chichester Park.
1920. Greenham, Miss J. G., 44, Orient Gardens.
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1901. Greeves, W. Leopold, Ormeau Avenue.
1901. Greeves, Fergus M., Garranard, Sydenham.
1918. Greeves, Owen, Tavanagh House, Portadown.
1908. Hadden, Mrs., Magharce, Portadown.
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1908. Hamilton, Miss, 5 Church Avenue, Holywood.
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1920. Harbison, Wm., Highbury, North Road.
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1904. Holland, Frank, Osborne Gardens.
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1914. Houston, James Dick, Northern Bank, Elphin, Roscommon.
1913. Humphreys, Miss Norah, Lynford, Osborne Park.
1915. Hunter, Miss K., Waterford Terrace, Coleraine.

1892. Jaffé, Lady Kinedar., Strandtown.
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 1914. Jenkinson, Hy., 29 Rosemary Street.
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 1916. Johnston, Miss M. B., Beechville, Glenburn Park.
 1916. Kay, Miss M. P., B.Sc., Burnside, Bangor.
 1917. Keiller, W., 11 Chichester Street.
 1918. Kennedy, D., Pembroke, Wandsworth Road, Knock.
 1920. Kenny, Mrs., 41, Claremont Street.
 1920. Keith, R. P., Shandon, Marlborough Park.
 1899. Killen, William, 20 Waring Street.
 1886. Kirkpatrick, F., 27 Oxford Street.
 1915. Kirkpatrick, W. H., Marlborough Park S.
 1868. Knowles, W. J., M.R.I.A., Flixton Place S., Ballymena.
 1877. Kyle, R. A., 15, Wellington Park.
 1901. Larmor, H. G., J.P., Lisburn.
 1920. Lavery, W., 32 Ann Street.
 1915. Lawrie, Thomas, East Bridge Street.
 1916. Lawther, Miss M. J. V., Marathon, Antrim Road.
 1912. Ledgerwood, N. J., J.P., 10, Wellington Park.
 1916. Lees, Miss S. L., Drumadoon, Castle Park.
 1920. Lepper, R. S., M.A., F.R.Hist.S., Elsinore, Crawfordsburn.
 1918. Lewis, Mrs. A. J., 2, Ranfurly Drive.
 1920. Lewis, Percy, 24, Mount Charles.
 1918. Lindsay, Eric, Barbaraville, Annadale.
 1899. Lindsay, Professor, M.D., 3, Queen's Elms.
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 1893. Lowry, D. E., 25, Donegall Place.
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 1910. Lowry, Miss L., Hazelwood, Bloomfield.
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 1905. MacCleary, A., Kensington Hotel, College Square East.
 1917. MacDevitt, H., 115, High Street, Holywood.
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 1914. MacLaine, Lachlan, Rathaline, Annadale Avenue.
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 1915. Maconachie, Mrs., Brooklands, Holywood.
 1905. Macoun, Mrs., Clanrolla, Windsor Park.
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 1901. MacRae, Kenneth, Balmoral.
 1920. Magowan, A., 2, Easton Crescent.
 1920. Magowan, Mrs. A., 2, Easton Crescent.
 1876. Major, Rev. J. J., Doagh.
 1905. Malcolm, Miss Susan, Downshire Road, Holywood.
 1899. Malcolmson, J. G. B., Cairnbourn, Strandtown.
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 1892. Maxton, James, Ulster Street.
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1919. Mayes, A. S., 23, Glandore Avenue.
 1903. Mayne, H. Horner, 24, Elmwood Avenue.
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 1906. Millar, Thomas O., 306, Antrim Road.
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 1915. Milligan, Arthur G., The Grange, Annadale.
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 1919. M'Caw, T., Glenfield, Donegall Park.
 1884. M'Cleery, H., 7, Bedford Street.
 1912. M'Clelland, E. W., B.Sc., 79, Kansas Avenue.
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 O M'Millan, W., J.P., 30, Ashley Avenue.
 1920. M'Neill, Mrs., Lockaboy, Knockdene Park.
 1898. Orr, James, 17, Garfield Street.
 1920. Osborne, T. Edens, 4 College Square, North.
 1920. O'Neill, Mrs. T. A. J., Shandon, Marlborough Park.
 O. Patterson, D. C., Glenard, Holywood.
 1888. Patterson, Robert, F.L.S., M.R.I.A., M.B.O.U., Glenbank, Holywood.
 1867. Pim, John, J.P., Bonaven, Antrim Road.
 1869. Pim, Joshua, 6, Donegall Square South.
 1903. Pim, W. R., Lisnagarvey, Lisburn.
 1903. Pooler, Rev. Chas. K., B.D., M.R.I.A., Carnbin, Whitehouse.
 1890. Porter, F. A., Queen's Square.
 1890. Porter, William, Beechview, Balmoral Avenue.
 1883. Praeger, R. Ll., B.A., B.E., M.R.I.A., Nat. Library, Kildare St., Dublin

1901. Rankin, Will, 26 Derryvolgie Avenue.
 1904. Rankin, Mrs., 26 Derryvolgie Avenue.
 1907. Rea, Miss M. W., Salem House, Sydenham.
 1916. Rea, Miss L. C., Salem House, Sydenham.
 1920. Reid, Mr. James, B.Sc., Holywood.
 1919. Reilly, Geo. C., Greenholme, Carrickfergus.
 1907. Riddell, Mrs., Donegall Park Avenue.
 1903. Robb, H. M., 44 Ulsterville Avenue.
 1921. Robson, Mrs., 81, Wellington Park.
 1909. Russell, Nelson, Strathmore, Lisburn.
 1916. Rutledge, Miss Ethel J., M.Sc., 92 North Parade.
 1911. Ryves, Miss, 8 Stranmillis Gardens.
-
1899. Sandes, Robert, Chorlton, Adelaide Park.
 1913. Savage, W. E. J., Lincoln Avenue.
 1917. Sayers, Miss, B.A., Bartragh, Knock.
 1920. Sayers, Miss J. B., Bartragh, Knock.
 1903. Sefton, Burton, St. Aubyn's, Deramore Drive.
 1918. Seymour, J., Inchmarlo, Marlborough Park.
 1911. Shaw, G. W., Ulster Bank, York Street.
 1921. Shaw, Miss L. H., 72, Cromwell Road.
 1905. Sheils, Rev. John F., Saintfield.
 1890. Skillen, Joseph, Largymore, Lisburn.
 1920. Small, Dr. James, Queen's University.
 1893. Stears, Samuel M., 6 Rosetta Avenue.
 1893. Steele, Miss, Dooneen, Marlborough Park.
 1910. Stelfox, Mrs. A. W., B.Sc., A.R.C.Sc.I., Mayfield, 14 Clareville Road, Rathgar, Dublin.
 1911. Stendall, J. A. Sidney, Municipal Museum.
 1904. Stephens, John Kyle, J. P., 13 Donegall Square North.
 1894. Stewart, W. J., Ormeau Road.
 1909. Stokes, W. J., Malone Park.
 1919. Strain, W., Windsor Park.
 1866. Swanston, William, F.G.S., Farm Hill, Dunmurry.
-
1920. Tedley, Miss E., Rosetta National School.
 1871. Todd, John, J.P., Clarinda, Fortwilliam Park.
 1901. Tomlinson, W. J. C., 17 Glandore Gardens.
 1875. Traill, W. A., M.A. Ing., Bushmills.
 1904. Turtle, William Haydock, 1 Holyrood, Malone Road.
 1909. Turtle, Mrs. Herbert, Rosemount, Knock.
-
1894. Walsh, Robert, Ashestiel, Malone Road.
 1893. Walker, W. J. D., C.B., The Sycanores, Drogheda.
 1917. Walker, Franklin M., Mount Royal, Whitehead.
 1911. Ward, Miss K., Albertville, Sydenham.
 1920. Ward, Miss Alice, Albertville, Sydenham.
 1919. Warnock, Mrs., Rugby Road.
 1909. Watson, John G., The Maples, King's Road, Knock.
 1921. Watt, Miss Anna, 622, Ravenhill Road.
 1880. Welch, Robert J., M.R.I.A., 49 Lonsdale Street.
 1920. Weston, W., Shandon Park, Knock.
 1877. Whitla, Sir William, M.D., College Square North.
 1917. Williamson, James, J.P., Sandown Park, Knock.
 1893. Wilson, George, 17 Bedford Street.
 1901. Wilson, Prof. Gregg, M.A., D.Sc., M.R.I.A., Queen's University.
 1904. Wilson, Mrs., Ardenza, King's Road, Knock.
 - o Workman, Rev. R. M.A., Crusheen, Cadogan Park.
 1901. Workman, W. H., F.Z.S., M.B.O.U., Lisimore, Windsor Avenue.
 1867. Wright, Joseph, F.G.S., 10 May Street.
-
1914. Yapp, Prof. R. H., M.A., Queen's University.

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- 1912. Deane, John, Mount Nephin, Knockbreda.
- 1913. Deane, Lindsay, Mount Nephin, Knockbreda.
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- 1916. Gourlay, Jack, 18, Willowbank Street.
- 1917. Grainger, Charles, Craigavad.
- 1918. Harris, Norman, 109, Fitzroy Avenue.
- 1918. MacKnight, John, 220, Springfield Road.
- 1915. Mayne, Miss Betty, 24, Elmwood Avenue.
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- 1918. M'Carthy, Desmond, 4, Ardlee Terrace, Holywood.
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- 1918. Quick, Kenneth J., 17, Rossmore Avenue.
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- 1915. Stephenson, Miss Kathleen, 2, College Park East.
- 1915. Twadell, Miss Amy, Nashville, Malone Park.
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PART IV.

1921-22

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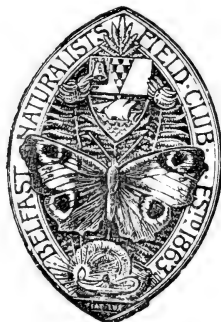
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ANNUAL REPORT AND PROCEEDINGS.
OF THE
BELFAST NATURALISTS'
FIELD CLUB,

FOR THE YEAR ENDING 31st MARCH, 1922.

(FIFTY-NINTH YEAR.)

SERIES II.
VOLUME VIII.



PART IV.
1921-22.

Joint Editors :
S. A. BENNETT, B.A., B.Sc.
A. M'I. CLELAND.

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1922.







Annual Report.

YOUR COMMITTEE has pleasure in submitting the Fifty-ninth Annual Report, as follows:—

During the year 1 Honorary, 167 Ordinary, 2 Associate, and 1 Junior Member have been elected; 16 have resigned and 8 have died. The total membership on 31st March, 1922, is therefore 456 as against 309 recorded in the last report, a gratifying increase of 147 Members, and a result very largely due to the energy of the Hon. Treasurer. The composition of the membership is now:—7 Honorary, 1 Corresponding, 2 Life, 435 Ordinary, 2 Associate, and 9 Junior.

Your Committee greatly regret the decease during the year of the following Members:—1 Life, 6 Ordinary, and 1 Associate. A list of their names will be found at the end of the Report.

Twelve Committee meetings have been held during the year, at which the attendances were as follows:—

S. A. Bennett	...	...	9	W. M. Crawford	...	...	8
Rev. W. R. Megaw	...	...	5	J. R. H. Greeves	...	...	5
T. E. Osborne	...	...	12	W. C. Boyd	...	...	2
D. Kennedy	...	...	2	A. R. Hogg	...	...	0
W. Porter	...	...	7	R. May	...	...	1
R. Bell	...	...	8	N. Carrothers	...	...	8
J. A. S. Stendall	...	...	10	Dr. T. M. Deans	...	...	6
Rev. W. P. Carmody	...	...	1	D. Elliott	...	...	6
Dr. A. R. Derryhouse	...	...	1	A. M'I. Cleland	...	...	10
S. M. Macoun	...	...	10				

On the resignation of Mr. D. Kennedy from the position of Hon. Librarian, in January, 1922, the Committee co-opted Mr. W. M. Crawford, B.A., I.C.S., F.E.S., to the vacancy.

The programme of Summer Excursions was carried out almost in its entirety, the proposed excursion to Woodburn Glen having to be abandoned owing to the Glen being in military occupation. The places visited and members present were as follows :—

Belvoir Park	...	21st May	...	71	Present.
The Gobbins	...	4th June	...	50	„
Ardglass	...	18th June	...	14	„
Downpatrick	...	2nd July	...	54	„
Galgorm Castle	...	30th July	...	59	„
Monlough	...	27th August	...	39	„
Knockagh	...	10th Sept.	...	48	„
Dromore	...	24th Sept.	...	47	„

A very successful *Conversazione* was held on the 28th March, in the Carlton Hall, 160 Members being present, the exhibits, as usual, proving most interesting and varied.

During the Winter Session the following papers were read, of which abstracts will be found in the Proceedings :—

1921.

October 25th—"The Comber Estuary," S. A. Bennett, B.A., B.Sc.

November 15th—"The Art of Burial," C. Bulla.

December 20th—"At Home with Fur and Feather," E. A. Armstrong.

1922.

January 17th—"Spiderland," J. A. S. Stendall, M.B.O.U.

February 21st—"Radio Activity in Relation to Geology," J.C.A. Brierley, M.Sc.

March 21st—"Birds: Extinct and Living," N. H. Foster, F.L.S., M.R.I.A., M.B.O.U.

All the above subjects were well illustrated by lantern views, the attendances of members being very good.

In June your Committee appointed Mr. S. A. Bennett, B.A., B.Sc., Delegate to the British Association Meetings, in Edinburgh, in the ensuing September. The subsequent report of the Delegate was submitted to a Sectional Meeting of the Club, held on the 29th November; an abstract is included in the Proceedings.

On the visit of the King to Belfast on 22nd June, the Committee decided that an Address should be presented to His Majesty in the following terms:—

Address to the King

TO HIS MOST GRACIOUS MAJESTY GEORGE THE FIFTH,
of the United Kingdom of Great Britain and Ireland and of
the British Possessions beyond the Seas, King, Emperor of
India.

May it please your Majesty,

WE, the President and Committee of the Belfast Naturalists' Field Club, desire on behalf of the Club to offer our most respectful, dutiful, and loyal welcome to the City of Belfast.

Knowing the great interest your Majesty has invariably taken in all branches of scientific research, we feel a pride in being permitted to approach your Majesty, as the Premier Field Club of Ireland and the one with the largest membership. Our Club was founded on the 6th of March, 1863, and has contributed in no small degree to the advancement of Science in this portion of your Majesty's Kingdom during the fifty-eight years that have elapsed.

We sincerely hope that your Majesty may be long spared in health and strength, to reign over a happy, united and prosperous people.

Signed on behalf of the Belfast Naturalists' Field Club.

S. A. BENNETT, B.A., B.Sc., President.

A. M'L. CLELAND, Hon. Secretary.

22nd June, 1921.

The Hon. Treasurer will lay before you his Statement of Accounts, while the Hon. Librarian, and the Hon. Secretary for the Junior Section will present their Reports.

In conclusion, your Committee desire to tender their hearty thanks to:—The Right Hon. Sir James Johnston, J.P., of Belvoir Park; the Right Hon. W. R. Young, D.L., of Galgorm Castle; Canon J. W. Cooke, of Dromore Cathedral; Mr. F. J. Bigger, M.R.I.A., of Ardglass; and Mr. G. M'Williams, of Ballyknockan, for their kindness and hospitality extended to members of the Club on the Summer Excursions; to Mr. F. W. Henry for the use of the Carlton Hall: to the Press for publishing reports of the Excursions and Meetings; to the Superintendents of the Railway Companies; and to the Kindred Societies and Public Institutions who have favoured us with their publications.

(Signed) S. A. BENNETT, B.A., B.Sc.

A. M'I. CLELAND, Hon. Secretary.

9th April, 1922.

Hon. Librarian's Report.

The Library has perhaps been used to about the usual extent, but I fear this is not saying very much. A quantity of most useful and interesting literature is received from exchanging Societies, and it seems to me a very great loss that no ready means are available for giving Members a chance of seeing what comes in. A room where all recently received Reports and Proceedings could be exposed for the easy inspection of Members would be a great boon.

A list of exchanges with other Clubs and Societies will be found on another page.

A copy of Vol. VII. (Series II.) of our own Proceedings has been bound for permanent reference in the Library.

Some interesting photographs have been presented to the Club by Mr. R. J. Welch, M.R.I.A.

(Signed) W. M. CRAWFORD, Hon. Librarian

Report of the Junior Section.

The Junior Section has had a reasonably successful winter

season considering the lethargic state it was in at the end of last summer. At a meeting of the Section Committee held last autumn it was decided to try and draw the Members together by means of a "tea." Invitations were accordingly sent out, and as a result we had quite a number of keen young people for a very enjoyable evening at the Museum. The thanks of the Committee are due to the ladies who very kindly provided the tea and helped to dispense it. After tea a short talk was given by the Chairman, Mr. S. A. Bennett, B.A., B.Sc.

Owing to a variety of causes, we have only had one meeting since then, at which, in the unavoidable absence of the President, who was to have given a lecture on "Wildflowers," plans for the Summer excursions were discussed, and several suggestions made with regard to Junior exhibits at the *Conversazione*. As a result we had a very promising exhibit which speaks well for the future of the Section and the Club: the objects of interest displayed comprising a very wide range indeed.

We hope that the Summer, now that we have really got going, will be even more successful, and that we may be able to lay the foundations of a really useful Junior Section.

(Signed) J. R. H. Greeves, *Hon. Sec.*

Deceased Members.

Sir Robert Anderson, Bart., J.P.

Mr. John Doran, J.P.

Mr. Joseph Galloway.

Mr. Edmund Foster Green.

Mr. D. C. Patterson.

Mr. Burton Sefton.

Mr. W. J. C. Tomlinson.

Mr. R. L. Woollcombe, M.A., LL.D.

Dr. Hon. Treasurer's Account for the Year ending 31st March, 1922. Cr.

RECEIPTS.		PAYMENTS.	
To Balance	£7 10 11	By Printing of Proceedings	£34 7 6
" " 1921 Conversazione	0 4 6	" Printing and Stationery	29 7 10
" Subscriptions	115 12 6	" Hire of Rooms	5 13 0
" Balance from Excursions	6 6 5	" " Lantern	7 10 0
" Refund	0 7 0	" Fire Insurance	0 10 0
" Sales of "Flora," &c.	3 15 7	" " "Irish Naturalist"	2 0 0
" Balance 1922 Conversazione	2 1 9	" Do. (Donation)	3 0 0
		" Gratuities	1 10 0
		" Delegate to British Association	3 3 0
		" Incidental Expenses	0 18 2
		" Addressing Circulars, &c.	5 12 6
		" Postage	50 16 1
		" Address to H.M. the King	6 19 3
		" Commission to Collector	0 5 0
		" Re-lettering the late Mr. S. A. Stewart's grave	3 10 0
		" Balance carried forward	0 16 4
	£125 18 8		£135 18 8

T. EDENS OSBORNE, Hon. Treasurer.

War Saving Certificates for £62 and £25 towards publishing a new "Flora of the North-East"

Examined and found correct by us,

S. M. MACCOUN, } Hon. Auditors.
W. M. CRAWFORD, }

Proceedings.

SUMMER SESSION,

BELVOIR PARK.

Date—21st May, 1921. Conductor—Rev. W. R. Megaw, B.A.]
Number present, 71.

The members assembled at the Ormeau Road tram terminus, at three o'clock, for the purpose of exploring Belvoir Park, permission to visit which having been very kindly granted by the Right Hon. Sir James Johnston, J.P.

Belvoir Park was looking its best, and the weather was all that could be desired, so that the botanical work effected was of a high order. The Park has always been a happy hunting ground for the Club botanists, and on this occasion it is pleasant to record that all the plants which were known to grow in the demesne were found in a flourishing condition. Amongst them may be noted the Bitter-cress *Cardamine amara* L. and the Greater Pond-sedge *Carex riparia* Curt. Two specimens of the Bird's-nest Orchid *Neottia Nidus-avis* Rich.—a rare plant with us—were found, and the Adder's-tongue fern *Ophioglossum vulgatum* L. was seen in profusion. The members greatly admired the profuse display of blooms in the rock and winter gardens

Tea was partaken of in the open at five o'clock, after which the election of 27 new members was proceeded with. The appreciation of the members for the kindness of the Right Hon. Sir James Johnston having been suitably expressed by the President (Mr.

S. A. Bennett, B.A., B.Sc.) the meeting broke up, the majority following the Conductor on the return journey, though some enthusiasts lingered considerably longer.

THE GOBBINS.

Date—4th June, 1921. Conductor—Dr. A. R. Dwerryhouse, D.Sc., F.G.S.
M.R.I.A. Number present, 50.

The neighbourhood of the Gobbins is always popular with the Club, and it was looking its best under the fascinating weather conditions which prevailed on the above date.

At a spot half-way to the Gobbins Head the Conductor gathered the party together and gave a clear, concise, and very interesting description of the principal geological points of the locality. Fortunately the tide was low and the members were thus able to trace the Liassic beds (covered at high water), thence through Greensands, Chloritic Chalk passing into true Chalk, capped in its turn by Basalts, the latter covered by Glacial Drift in the form of boulder clay.

Several characteristic fossils having been obtained the party moved on to the Gobbins Head, a natural feature which gives such a good example of the flow structure of the Basalts. Some of the flows are almost columnar in their nature, others are splendid examples of amygdoloidal Basalt studded on every conceivable portion with zeolites sparkling in the sunlight. Here and there red layers of bole show where pauses in the lava flows allowed sufficient time for denudation to take place.

At the business meeting held during the excursion eleven new members were elected, this bringing the total of new members elected since the Session opened to eighty, a number testifying to the continued healthy growth of the Club, the only Naturalists Field Club in the North of Ireland.

ARDGLASS.

Date—18th June, 1921. Conductor—S. A. Bennett, B.A., B.Sc.
Number present, 14.

The early start of 7-30 a.m., and high rail fare no doubt were the causes of so small an attendance. Nine Members journeyed down by train; one Member motored from Newtownards and joined at Ardglass; Mr. and Mrs. W. A. Green met the party at Ardtole Church, and at Castle Shean the party was completed by Mr. F. J. Bigger and Mr. D. Kennedy. The weather throughout the day was magnificent.

The route followed was round Phennick Point to St. Patrick's Well. Here lunch was partaken of and the party was photographed by Mr. T. E. Osborne and the Hon. Secretary.

On the way to the Well the geologists came across many fine examples of vertically tilted strata of Silurian grits, the rocks running in some places well out to sea, and giving a picture of the terrible nature of the coast in times of storm. On the way to the Point an interesting cave was observed, the roof formed of calcreted glacial gravel resting on very much inclined beds of Silurian grit.

At Chapeltown a halt was made to examine the fine Anglo-Norman grave-slab, originally brought from Ardtole Church, and now built into the wall of Dunsford Chapel.

Passing on, the party halted again at the "Cross of Ardtole," a small mound resembling a grave with blocks of grit arranged upon it in the form of the spots on a 'five' of a pack of cards. Nothing is known concerning this monument.

A much longer halt was made at Ardtole Church, once the ancient church of St. Nicholas, standing on the summit of the commanding Hill of Ardtole. The east wall, containing a large arched window which looks over the sea, still remains, as well as the side walls. Here the Conductor gave an interesting account of the history of the structure, and also its restoration and repair,

the latter a work largely due to the initiative of Mr. F. J. Bigger, M.R.I.A.

Here Mr. and Mrs. Green joined the party and very kindly placed their car at the disposal of the Members, taking them in relays to Castle Shean, in Ardglass town, where Mr. Bigger had tea ready, an attention very greatly appreciated.

Castle Shean, under the occupation of Mr. Bigger, has become a most interesting museum of Irish ethnographical objects, so numerous and detailed that the Members regretted lack of time prevented full justice being done to them.

Among the more remarkable plants noticed by the botanists during the day were the following :—Brookweed *Samolus Valerandi*, L.; Sea Samphire *Crithmum maritimum*, L.; Vernal Squill *Scilla verna*, Huds., in fruit; Marsh Orchid *Orchis latifolia*, L.; Spotted Orchid *Orchis maculata*, L.; Common Centaury *Erythraea Centaurium*, Pers., both pink and white, etc.

DOWNPATRICK.

Date—2nd July, 1921. Conductor—S. A. Bennett, B.A., B.Sc.
Number present, 54.

The party started promptly at 10-30 a.m. in two motor charabancs, going directly from the Museum, College Square North, to Inch Abbey via Saintfield and Crossgar.

Lunch was taken immediately on reaching the Abbey, after which the President (who was acting as Conductor) gave a short and very interesting account of the history of the picturesque ruins. The Abbey was founded by Sir John De Courcey, three years after his arrival at Downpatrick from Dublin, for monks of the Cistercian order, the date of dedication being 3rd June, 1180.

The church of the Abbey is cruciform and has been recently restored by the Irish Board of Works. At the east end of the church are three beautiful lancet windows of early English design the most picturesque features of the ruins. The church was 170 ft. long with nave and aisles, and side chapels on the eastern sides.

of the transepts. Adjoining the church on the south side were the sacristy, chapter house, monks' day rooms, kitchen and refectory. The extent of the remains of these buildings shows that the Abbey was a place of very considerable importance in mediæval times. The architectural glories of the Abbey are faintly revealed by the scanty remains of the groined vaulting of the chapels and the bases of the pillars in the nave.

This was not the first church to be built on the site, an ancient church, beside which the abbey was erected, standing until recently in the middle of the adjoining cemetery. It has, however, been destroyed, nothing now remaining of it.

From Inch Abbey the party drove to Raholp, via Quoile Castle, in order to visit the little church standing on a low mound, apparently originally a rath, about 100 yards off the road. Here the Members were met by Mr. F. J. Bigger, M.R.I.A., who rapidly sketched the history of the building. Founded by St. Patrick, this venerable edifice is constructed of rough stones cemented with yellow clay instead of mortar. It measures about 33ft. x 21 ft. and has recently been very carefully restored by Mr. Bigger, largely at his own initiative and cost.

The next halt was at Lough Money Cromleac, a structure which differs from the type, inasmuch as the capstone rests on two stones only, which stand parallel on edge. The capstone is 12 ft. by 5 ft., and both it and the supports are rough blocks of Silurian grit.

From hence the motors took the Members to Ballyalton stone circle, a much ruined monument. Only about a quarter of the circle now remains, this consisting of upright slabs of grit, with an odd stone here and there to mark the positions of the rest.

From Ballyalton the Members were driven rapidly into Downpatrick and to the Cathedral, where the courteous verger (Mr. M'Williams) was in readiness, who took charge of the party and acted as a very efficient guide.

Tea was served at Denvir's Hotel, English Street, promptly at 5-45 p.m., after which, at the business meeting following, the President made feeling reference to the great loss the Club had sustained in the recent decease of Mr. W. J. C. Tomlinson, a Member of twenty years' standing and a botanist of great repute. The President proposed that a vote of condolence be forwarded to the late Mr. Tomlinson's family. This was seconded by Mr. N. Carrothers and passed in silence, the Members standing.

After three Senior Members and one Junior Member had been elected the meeting terminated.

At 7 p.m. the cars were mounted again for the last time, and the return journey began, the route going through Killyleagh and Comber, Belfast being reached about 8-30 p.m., when the Members dispersed in various directions, all agreeing that the Excursion had been one of the most successful in the Club's history.

GALGORM CASTLE, BALLYMENA.

Date—30th July, 1921. Conductor—Rev. W. R. Megaw, B.A.
Number present, 59.

This excursion would have been more enjoyable under better weather conditions which, though warm, were dull, with very heavy rain shortly after leaving Antrim. This continued without intermission all the way to Galgorm and back to Antrim, with another heavy shower when leaving the Round Tower. After that the weather was very bright, sunny and clear.

The party started from the Museum, College Square North, in two motor charabancs promptly at 10-30 a.m., journeying to Galgorm Castle via Lisburn, Glenavy, Antrim and Ballymena. On arriving at Galgorm the members found that, through the very thoughtful kindness of Mr. A. Raphael, the Girls' School Buildings had been thrown open, a bright fire lighted, and every preparation made for the comfort of the large party. Here lunch was taken, after which a short business meeting was held at which nine new members were elected, and the President (Mr. S. A. Bennett,

B.A., B.Sc.) informally voiced the appreciation of the members of the kindness of the Rt. Hon. W. R. Young, D.L., in allowing the Club to visit the Castle and Demesne. Subsequently Mr. Young sent a message in which he expressed his regret that he was not able, owing to the state of his health, to meet the members personally.

Before leaving the School Buildings the Vice-President (Rev. W. R. Megaw, B.A.), who was acting as Conductor, gave a short account of the somewhat nebulous history of Galgorm Castle.

The torrential rain cut short the visit to the Castle and the party was soon on board the charabancs again, en route for Antrim. Here tea was served in Hall's Hotel, High Street, promptly at 5-30 p.m., the comfortable meal and large fires proving very acceptable to all the party.

After tea the members visited the Round Tower, (by kind permission of Miss Clarke), and here the Rev. W. A. Adams, B.A., gave a short sketch on the subject of Round Towers in general and the Antrim Round Tower in particular, speaking in his usual happy manner.

After the party had been photographed by Mr. W. A. Green, (during an obliging glint of sunshine, as the members were about the Tower), the charabancs were mounted again, the party leaving Antrim promptly at 7 p.m., reaching Belfast without further delay at about 8 o'clock.

WOODBURN GLEN.

This excursion arranged for Saturday, 13th August, 1921, had to be abandoned owing to the Glen being in the possession of the Military.

MONLOUGH.

Date—27th August, 1921. Conductor—A. M'I. Cleland. Number present, 39.

The party left the Museum, College Square North, promptly at 2 p.m., and in fine weather, and thus were able to thoroughly

enjoy the beautiful drive to Carryduff, this part of the journey being made by motor charabanc.

On reaching the side of the lake the botanists dispersed on their various quests, meeting with a considerable amount of success, the following among other plants being noted:—Bur-Marigold *Bidens cernua* L.; Sneeze-wort *Achillea Ptarmica*, L.; Bur-reed, *Sparganium ramosum* Huds.; a solitary flowering specimen of the Buck-bean *Menyanthes trifoliata*, L.; Horse Mint *Mentha silvestris*, L.; Hairy Mint *Mentha hirsuta*, L.; Water Mint *Mentha aquatica*, L.; Whorled Mint *Mentha sativa* L.; Field Mint *Mentha arvensis*, L.; Marsh Cud-weed *Gnaphalium uliginosum*, L.; Common Hemp Nettle *Galeopsis tetrahit*, L.

The party reached the house of Mr. M'Williams at the foot of the lake about 4-30 p.m., glad to take shelter there from the persistent rain which was first met with on arriving at the lake side. Mr. M'Williams and family had made every arrangement for their comfort, large fires having been lighted in two rooms, with a plentiful supply of hot-water just on the boil. Tea was quickly prepared, of which the Members were greatly in need, everyone being most appreciative of the kindness and attention extended to them.

At the business meeting following tea six senior Members were elected. Reference was also made to the recent loss the Club had sustained in the deaths of Mr. Joseph Galloway, a Member for 30 years, and Mr. Burton Sefton, a Member for 18 years.

The route to Ballygowan was resumed about 5-30 p.m., the programme being somewhat altered on account of the heavy rain, and in due time the Members reached town again none the worse for the inclement weather.

THE KNOCKAGH.

Date—10th September, 1921. Conductor—T. Edens Osborne.

Number present, 48.

This, the eighth excursion of the Summer Session of the

Club, was attended by forty-eight members, who entrained for Greenisland at 2-15 p.m., a substantial reduction in railway fares most generously conceded by the management of the Midland Railway (N.C.C.) being much appreciated by all.

The approach to the Knockagh (the ancient name of which was "Knocksciagh," *i.e.*, "The Hill of the White Thorn,") was over a portion of the links of the Greenisland Golf Club, thence by easily negotiated paths to the base of the mountain. Here the party halted to give the Conductor an opportunity of outlining the programme.

Arrived at the hill Mr. R. Bell, H.M.Min.S., gave a short instructive address on the geology of the hill and district, in which he pointed out the irregularity of the basaltic strata, massive basalt being superimposed upon friable amygdaloidal basalt, which rests on another stratum of massive basalt, underneath which appears the chalk.

Although somewhat late in the season for a display of blooms, the botanists of the party found the flora of the hill most interesting. Among the specimens observed were the Wood Vetch *Vicia sylvatica*, L. ; Spindle Tree *Euonymus europaeus*, L. ; Bell Heather *Erica cinerea*, L., still beautiful in its profusion of pink bells ; Golden Rod *Solidago Virgaurea*, L. ; Common Agrimony *Agrimonia Eupatoria*, L. ; Common Hemlock *Conium maculatum* ; &c.

From the summit of the hill, 903 feet above sea level, a magnificent bird's-eye view was obtained of Belfast Lough, its shores and surrounding hills, the Mourne Mountains and coast of Scotland. After tea a brief business meeting was held, at which, in the absence of the President (Mr. S. A. Bennett, B.A., B.Sc.), the chair was occupied by Mr. F. Adens Heron, J.P., who suitably expressed the thanks of the Club to the Greenisland Golf Club for permitting the party to pass over a portion of their links *en route*. The election of seven new members, who were proposed

by the Hon. Treasurer and seconded by Mr. R. Bell, H.M.Min.S., terminated the proceedings, after which a start was made for Greenisland Station.

Although the weather conditions were by no means ideal, all the members were delighted with the outing. Evidently each one present had adopted the Rotarian motto: "Service, not Self," which created the same *esprit de corps* that has hitherto contributed so much to the success of the Club's summer excursions.

DROMORE.

Date—24th Sept., 1921. Conductor—Rev. Canon W. P. Carmody, M.A.
Number present, 47.

The ninth and concluding excursion of the Summer Session, was attended with magnificent weather.

The party journeyed to Dromore in reserved compartments by the 12-50 p.m. train. Some Members joined at Lisburn, others came by a later train, others, again, motored out. All, however, met in the Cathedral at Dromore, where they were welcomed by the Rector of Dromore (Rev. Canon J. W. Cooke) who gave a most interesting address on the history of the Cathedral from the time of St. Colman, early in the 6th century, down to the present day. St. Colman's "Pillow," an oval shaped block of stone bearing a beautifully incised cross in low relief, is now enshrined in the Cathedral wall between the vestry and the chancel, a greatly valued relic, with which the name of the late Canon H. W. Lett, M.A., M.R.I.A., is inseparably associated. The Dromore Bible, printed in 1613, another valued relic, was also shown, having recently come into the possession of the Cathedral authorities after an absence of 300 years. One cannot think of Dromore without associating it with the name of Bishop Jeremy Taylor (1613-67), whose name is perpetuated in the very handsome and valuable silver communion service, the gift to the Cathedral of Jeremy Taylor's wife. Another eminent divine of Dromore was Bishop Thomas Percy (1728-1811), the friend of Johnson, Goldsmith and

other distinguished contemporaries, and the author of "Reliques of Ancient English Poetry." His vestments, very carefully preserved, were shown to the Members, with many other relics of which the Cathedral is justly proud, including the recently erected War Memorial Window whose chaste design cannot fail to please all visitors.

The next halt was at the restored Cross erected on the abutment of the bridge over the Lagan. This memorial is mentioned as standing in the reign of James I., and still bears traces of very beautiful Celtic interlaced ornament. After many vicissitudes it was finally re-erected on its present site by the exertions of the Belfast Naturalists' Field Club.

The Club was also responsible for the re-erection in the Market Place of the old Town Stocks, the next object visited. The Stocks having been opened the Hon. Secretary allowed himself to be incarcerated therein, this being considered the appropriate moment for a photograph.

Passing the old Castle, said to have been built about 1607, the party proceeded to the great Mount of Dromore, where the Conductor gave a very interesting address on raths and earth mounds. This fine specimen of a rath is nearly 600 feet in circumference, 60 feet in height, with a diameter at the summit of 55 feet. It is surrounded by a rampart or battlement. The trench has two branches, embracing a rectangular fort of lower elevation, 100 feet in diameter. The Mount must have been in early times a place of great importance. The name of the townland on which it stands—Ballymaganlis (Baile-na-ceann-lios)—means "The Place of the Chief Rath." Twenty minor forts or mounts in two half-moon shaped lines, still exist and surround it.

The view from the Mount was superb: the placidly flowing Lagan in the immediate foreground at the foot of the rath, in the middle distance the swelling rise of Slieve Croob, flecked with light and shade, and backed by the blue-grey broken outlines of the

Mourne Mountains. These made a picture not easily to be surpassed, showing Co. Down at its very best.

From the Mount an adjournment was made to the Church School House, where, through the kindness of Canon Cooke, a plentiful supply of hot water was ready for tea-making, so that the members were soon sitting down to a much needed meal.

At the usual business meeting following tea, one Junior and nine Senior Members were elected. The President (Mr. S. A. Bennett, B.A., B.Sc.) having suitably voiced the appreciation of the Members for the kindness shown by Canon Cooke, and having outlined the programme of the forthcoming Winter Session, the proceedings terminated, the Members returning to Belfast by the 6 p.m. train.



Winter Session.

NOTE.—*The authors of the various Papers of which abstracts are given, are solely responsible for the views expressed therein.*

THE COMBER ESTUARY.

The first ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 25th October, when the President (Mr. S. A. Bennett, B.A., B.Sc.) gave his inaugural address, taking for his subject "The Comber Estuary," a district which has been often visited by the Club.

The President began by asking, in the first place, to be permitted to return his thanks to the Club for the honour conferred upon him in electing him to the Presidential Chair for the second year in succession.

He said—I appreciate the compliment all the more as my term of office has been rendered memorable in the annals of the Club by reason of the historic visit of their Majesties the King and Queen to Belfast, on June 22nd of this year, an event which afforded us the welcome opportunity of presenting a loyal and dutiful address to the Throne.

Furthermore, the Club seems to be entering on a period of increasing activity—a very pleasing sign of the times.

During the years of the war the work of the Club has been carried on with considerable difficulty, but now that those lean years have passed we may with confidence look forward to a brighter future. The financial difficulties, of which I spoke at some length in my last address, seem in a fair way to disappear under the magic wand of our Honorary Treasurer, to whose efforts the

notable increase of membership which has taken place during my term of office is mainly due. With this increase in our numbers, with better travelling facilities and with the livelier interest in Field Club work displayed by the community at large, our prospects are bright indeed.

Political changes, with which we as a Club have no concern, have made us the only Field Club in the country, and the time seems opportune for enlarging the scope of our activities. I would like to see the whole of Ulster regarded as the particular province of the Belfast Naturalists' Field Club. Looking back for a moment we can congratulate ourselves on a successful Summer Session. The Committee arranged eight excursions during the past summer months, and an average attendance of 48 Members showed how thoroughly their efforts were appreciated. There was always a considerable proportion of members who took a general rather than a special interest in Field Club matters; new Members were always coming in, though not always in such numbers as have recently been welcomed to our circle, and such Members may be to a large extent unaware of what the Club has achieved in the past, where its interests lie in the present, and what constitutes the ideal at which it aims for the future.

With a view to stimulating a more lively interest in such Field Club topics as outlined, the Committee have set aside an evening of the Winter Session for a discussion on the scope and aims of the Club, at which meeting I will submit my report as Delegate to the recent meeting of the British Association in Edinburgh.

Such an opportunity for an exchange of views on such a subject would open out new lines of activity for the Club, and thus help to make the Belfast Naturalists' Field Club even more successful in the future than it has been in the past.

The President then proceeded with his address, and stated that the area of the Comber Estuary is entirely covered by glacial

gravel deposited in late glacial times. This spreads out from Comber covering an area of about two square miles, mostly on the N. side of the estuary of the present river.

It represents the delta at the mouth of an overflow channel from the old glacial "Lake Belfast" of the Geological Survey Memoir—and is to be correlated in time with the Lisburn Esker, the Malone sands and clays, and the "dry gap" of Holywood. Haw Hill and Island Hill are to be regarded as the summits or "drumlins" of the earlier typical boulder clay of the district protruding through this later glacial deposit which is banked up against their sides.

Narrowing the investigation to the area lying between the levels of the highest and lowest tides he traced the effect of estuarine conditions on the vegetation of that limited area—which is occupied by typical Salt Marsh vegetation.

The Salt Marsh plants, owing to the conditions of life under which they exist, exhibit a desert *facies*—and adaptations to these conditions profoundly modify the Root and Leaf Systems of the plants.

The pioneer plant in the Comber Estuary is the Glasswort (*Salicornia*) of which two species were described. As the level of the land rises other plants make their appearance, notably the grasses *Sclerchloa maritima* Huds., and *Festuca rubra* L., which together form a compact sward in which many of our most beautiful seaside plants find a congenial home.

A short account was given of the formation of a salt marsh with its accompanying drainage channels and "Saltpans."

The *Festuca* meadow, in the Comber Estuary, is replaced at higher levels by closed associations of *Juncus maritimus*, Sm., or *Scirpus maritimus*, L. Where the water becomes fresher owing to drainage from the glacial gravels by which the estuary is surrounded the Reed grass *Arundo Phragmites*, L. makes its appearance.

The lecture closed with a comparison of the Comber Salt Marsh with other salt marshes in the N.-E. of Ireland.

The lecture was very well illustrated by a series of lantern slides, maps, and specimens of the plants discussed.

After a few remarks by the Hon. Secretary (Mr. A. M'I. Cleland), Mr. J. A. S. Stendall, M.B.O.U., and the Rev. W. R. Megaw, B.A., the proceedings terminated with the election of twelve new members.

THE ART OF BURIAL.

The second ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 15th November, when Mr. C. Bulla gave a lecture on the above subject, the chair being occupied by the President (Mr. S. A. Bennett, B.A., B.Sc.)

For the first four centuries of the Christian era (Mr. Bulla said), the Christians of Rome had interred their dead in the Catacombs, a series of subterranean excavations, consisting of long horizontal passages, with recesses on either side, arranged in tiers for the reception of the bodies, closed in by slabs bearing inscribed memorials and emblems of the faith. During the persecution of the second century the Catacombs were used as places of assembly for worship, and the association of the Church and the Cemetery thus established has continued ever since. It was in the ninth century that formal consecration of Churchyards became customary.

In Egypt and perhaps in Palestine the Christian church inherited the practice of embalming, to which there is frequent reference in the Scriptures. The Israelites learned the art from the Egyptians. The soil and climate of Egypt seem to have afforded facilities for embalming, unmatched in any other part of the world.

The notion that the dead may require the things they had needed in life has also preserved for the world of to-day many

relics of the customs of past ages, but to go into this would provide material for a life time's study in Egyptology alone.

Geology is our hand-maid in tracing the burial customs of ancient man, and the early race of the Neanderthals first attracts attention. From investigation in the valley lands of the Rhine, Seine, and other parts of France they were big men with low, receding brows, skulls somewhat pointed behind; evidently savages contemporary with the great extinct quadrupeds. In strong contrast to these we have the Cro-Magnon race, of good stature, of handsome and intellectual appearance who inhabited South-west France, the valley of the Meuse, and Italy. They existed long after the Neanderthals, for at least in the fourth of the progressive stages of their history, all the great mammals had disappeared, except the mammoth and rhinoceros, while the reindeer browsed peacefully in the still cold European wilds.

Belgium furnishes us with the remains of the third group of human beings—a small squat race, quite like the modern Lapps, known as the “Furfooz” race.

Of all these early races one broad statement may be made: they all practised burial of the dead, in many cases with conspicuous care and the accompaniment of respect and veneration, and no trace of cremation appears.

A great gap separates the period described from the Neolithic or Polished Stone age. Changes of surface may be noticed, the sea which covered the modern Netherlands left the country almost as we find it. The race of men occupying Europe had attained a higher level of culture, used finer implements, but still of stone, and practiced agriculture and other arts of life.

We may assume that the Neolithic was almost a “golden age” of progress—it saw the birth of the epoch of the great buildings which were erected, from India across North Africa, and up the western side of Europe. Dolmens, Cromlechs, Menhirs, Barrows or mounds, which we find in wonderful preservation in North America, Scandinavia, France, England, Holland, and

Ireland. These were all funeral monuments; vast graves, some still enclosing skeletons—the burial mound of Karby, in Gothland, contains eighty. The bodies buried in these structures are very often surrounded with a great variety and number of weapons, ornaments, trinkets, and amulets. All the interments point to universal inhumation, but we are gradually approaching the time when cremation was introduced—tentatively at first—for cremated and inhumated bodies have been found in the one grave.

A debt of gratitude is owing to the brothers Siret of Antwerp, whose explorations in the south of Spain were of great extent. It was a strange transition time from Neolithic to a metal period, which yielded them many hundreds of silver and other objects,

It would seem that with the introduction of bronze first comes evidence of cremation, though in fifteen villages, with 1,300 burial places, no cremations were found—the men of the sub-period had returned to the primæval custom of inhumation, the graves of very many being found beneath the floors of the dwellings. In four-fifths of the cases the bodies were found in a crouching, knee to chin, attitude, packed in large earthen jars, sometimes with a sealed cover; sometimes two jars placed mouth to mouth, and often two bodies, one of each sex, in the same jar. With the bodies were often found bones of oxen, copper axes, and quantities of trinkets of silver.

All evidence leads us to assume that cremation came in with the race of the great stone builders. Who were they? Whence came they? Travelling ever westward—their structures may be seen in the Crimea, Southern Russia, Spain, France, Germany, Holland, Denmark, Sweden, England and Ireland, and another life wave left other evidences in North Africa, Palestine, and even India. Drs. Bawens, Fergusson, Hamard and De Estienne consider this race to have been the Kelts, or at least Aryan or Indo-Germanic. Bawens states definitely: "The Aryans were the originators of cremation; all nations of Aryan origin made use of the funeral pyre. Non-Aryan races, with the exception of perhaps the Japanese, were strangers to the idea of cremation."

* * * * *

The grand national monuments of the Boyne Valley, five miles west of Drogheda, and thence extending about three miles along the north bank of the river, have been identified as the Brugh-na-Boinne of the monuments particularly described in the "Senchas na Relec," or History of the Cemeteries, preserved in the "Leabhar na-h-Uidri," and the "Dindsenchus" of the Book of Ballymote.

The lecture was well illustrated by a very fine series of lantern views, sketches and diagrams.

After a few remarks by the President, the Hon. Secretary (Mr. A. M'I. Cleland) and Rev. Canon W. P. Carmody, the proceedings closed with the election of thirteen new members.

THE CLUB'S ACTIVITIES.

The first Sectional meeting of the Club was held in the Museum, College Square North, on Tuesday, 29th November, when the President (Mr. S. A. Bennett, B.A., B.Sc.) read his report as Delegate to the British Association meetings in Edinburgh. Following this a series of very suggestive short papers or addresses was given on various activities of the Club, the writers or speakers indicating how best these activities could be carried on.

REPORT OF DELEGATE TO CORRESPONDING SOCIETIES' CONFERENCE OF BRITISH ASSOCIATION FOR THE YEAR 1921.

The meetings of the British Association took place this year at Edinburgh, and there were two meetings of the Conference of Delegates under the Presidency of Sir Richard Gregory—the distinguished Editor of *Nature*, the first meeting being held on Thursday, 8th September.

The subject of the Presidential address was "The Message of Science," in which Sir Richard Gregory emphasised the point that the main duty of Scientists was the creation of new knowledge for the world to use, the use to which the knowledge would be put would depend not on the Scientists as such, but on the moral sense of the community.

Speaking of the duties and functions of local Scientific Societies he appealed to the Conference of Delegates to do what they could through their own Society to disabuse the public mind of the idea that Science stands for nothing but gross materialism, an obligation to the community which I am glad to say the Belfast Naturalists' Field Club has always recognised. He pleaded for a closer relationship between the local Scientific Society and the community at large, and urged all local public authorities to take the opinion of their local Scientific Society as a matter of course, on all questions which fall naturally within the province of that Society.

I am afraid that in Belfast we are very far at present from this Utopian state!

At this meeting a resolution was passed urging the Council of the British Association to consider the question of reducing the cost of publishing Scientific Proceedings, either by grants in aid or in some other way.

The second meeting took place on Tuesday, 13th September, Sir Richard Gregory again in the chair, at which the subject of "Regional Surveys" was discussed, the speakers being Professor Patrick Geddes and Mrs. Frazer Davis.

The systematic study of a definite region from every point of view is work for which a Naturalists' Field Club is peculiarly fitted, and your representative fondly hoped that he would gather many new ideas on methods of work and presentation of results which would prove of interest to Club Members. Unfortunately this was not the case, the discussion revolving round the evolution of man and his works in relation to his environment, and regional

survey work was regarded merely as a means of improving the modern method—or lack of method—of town-planning. The exhibition of Regional Survey Maps was interesting and instructive, not as showing what to do and how to do it, but mainly as an example of what to avoid in making a Regional Survey of a district. Some of the efforts were in all senses of the word puerile, and some were not worth the making, simply because their contents could be read off the Ordnance Survey map of the district with the expenditure of very little time and thought.

There were, however, two exceptions to this in the maps of the South Wales coalfield area, compiled by the Ministry of Health with the direct object of supplying the government with information ; and a magnificent series of photographs of objects of local interest—each carrying a label which ensured complete identification—submitted by the North Staffs. Field Club, a society with which we exchange Proceedings. No maps were sent with this exhibit, but the series was of outstanding merit and suggests a line of future activity for our Club. At this meeting it was suggested that representatives should inform their respective societies that in future it is likely that each local society sending a delegate to the Conference will be called on to pay the usual membership fee to the British Association instead of exercising this privilege gratis, as at present. Your representative was asked to obtain an opinion on this point before next year's meeting at Hull.

(Signed) S. A. BENNETT, B.A., B.Sc.

PRESIDENT

Mr. N. H. Foster, M.R.I.A., F.L.S., M.B.O.U., wrote as follows on the subject of

ZOOLOGY.

Our President requests me to contribute a note towards this evening's proceedings, and my remarks will be confined to the domain of Zoology. To my mind Field Club workers should

devote their attention to the detailed distribution of our local fauna and its record. For this purpose it is necessary that the worker be more or less adept in the identification of the group or groups of animals, and it may be well to emphasise that a record based on faulty identification is absolutely useless, nay, even misleading and hurtful. In cases where the slightest doubt may exist it is essential to have the animal examined by an expert before recording its presence.

For Field Club purposes I am of opinion that marine Zoology may be ruled out, and that studies should be confined to those organisms which live on land or in fresh water. In our district the Vertebrate animals are fairly well known—particularly in the case of birds—but even here new discoveries await the worker. Within the past few years the Tree-sparrow, Scoter, and Fulmar have been added to the list of birds breeding in Ulster, and if I might prophesy I would hazard the opinion that the Widgeon and Little Tern will be found breeding in Co. Antrim. Again, the Black-necked Grebe is rapidly spreading its breeding range in the British Islands, and its nesting has been discovered in several Irish localities within the past few years. So far as I know none have been found in Ulster, which contains many lakes adapted to this bird's requirements, and which are utilised by its relatives the Great-crested and Little Grebes.

As regards the study of Invertebrate animals there is a vast field for exploration. In our district the distribution of the Land and Freshwater Molluscs, Terrestrial and Freshwater Crustaceans (Amphipods and Isopods) and Myriapods have received considerable attention, and although, doubtless, some further details may be forthcoming, in the main these groups may be considered as fairly worked out. Some of our members have from time to time dabbled among the Lepidoptera (Butterflies and Moths), Coleoptera (Beetles), Spiders and False Scorpions, but in these groups for the most part there is plenty of room for good systematic workers. Outside the afore-mentioned there is practically virgin

ground for work. Numerous Orders of the Class Insecta have been totally neglected, and whilst it must be admitted that great difficulty exists regarding the necessary literature requisite for the study of some of them, in the case of the Ants this is not so. This group I would recommend to some energetic worker. It is not overwhelmingly difficult, and in Donisthorpe's book, "British Ants," should be found enough information to enable one to do good and useful work.

For about thirty years the *Irish Naturalist*, a monthly journal, has provided Nature History workers with masses of information. Owing to paucity of support it is feared that its issue must be suspended if many new subscribers be not forthcoming. I think I am correct in stating that not more than about half-a-dozen of our members (and of these about half are resident outside Ulster) give it their support. Notwithstanding the recent influx of new members this index of the Club's vitality seems to point to a very low ebb, and I would appeal to members for support in this matter.

It is highly improbable that any one of us is destined to rear a great biological edifice, but each one can gather sufficient clay to make a brick which, who can tell, the future Darwin may find an indispensable unit for the construction of his temple.

(Signed) NEVIN H. FOSTER,

M.R.I.A. F.L.S., M.B.O.U.

Mr. R. Bell, H.M.Min.S., gave the following short address on

GEOLOGY.

Probably no district of such limited extent in the three kingdoms exhibits so many formations worthy of the attention of the Geological student as the hills in the vicinity of Belfast. It may be said, with almost equal truth, that no district receives less attention at the present day. This in spite of the fact that almost

all the beds which the ranges of hills exhibit on their slopes yield fossils and minerals, and that excellent sections are available to everybody.

It must not be supposed, from the comparative neglect of an interesting district, that previous observers have so exhausted the subject that there remain no attractions to the original worker. In spite of the careful observations of the past, unrecorded minerals and new fossil sections are not difficult to discover, and those who know the district best still look upon it as a promising field for further work.

The Secondary rocks of this district have been the subject of many elaborate reports. Major-General J. E. Portlock, of the Royal Engineers, when conducting the Geological branch of the Ordnance Survey of Ireland, gave a summary of all that was then known and added the result of his own observations in his "Report on the Geology of the Co. of Londonderry, &c.," published in 1843.

Since then occasional papers have been published by others interested in the science, the most valuable being those of that distinguished scientist, the late Professor Ralph Tate, F.G.S., the founder of the Belfast Naturalists' Field Club.

Professor Tate contributed to the *Quarterly Journal of the Geological Society*, in 1864, an elaborate paper "On the correlation of the Cretaceous formations of N.E. of Ireland," with list of fossils found therein, figuring some of the new species. Then he investigated the Liassic rocks of Antrim and Derry, his work on this subject, communicated to the Belfast Naturalists' Field Club, and published in the Proceedings for 1870, still remaining the best record of these rocks.

Further contributions to our knowledge of our secondary rocks have been made by the distinguished French geologist, Mons. C. Barrois, who, in 1876, published a monograph on the Upper Cretaceous Rocks of Antrim and Derry. The same rocks were also investigated in the year 1877, by a member of the Belfast Naturalists' Field Club, the late Mr. William Gault, who

was well known as an ardent field geologist. Reference may also be made to the systematic lists published by the Belfast Naturalists' Field Club of the records of the early researches of Messrs. J. Wright, F.G.S., S. A. Stewart, A.L.S., F.B.S.E., and Wm. Swanston, F.G.S.

More recently an exhaustive study of the Cretaceous strata of Co. Antrim has been made by Dr. F. W. Hume, who, in 1897, published a paper on the subject in the *Quarterly Journal of the Geological Society*. The researches made by Dr. Hume mark the beginning of a new epoch in the science of Cretaceous rocks.

The new map and the new memoir of the Geological Survey, published in 1904 by the Government Surveyors, under the direction of Mr. G. W. Lamplugh, F.G.S., are of immense value to the field geologists. The memoir is trustworthy in its information and is rendered doubly serviceable in its new form by its reference to the work done by the Belfast Naturalists' Field Club, whose Geological Section, started in the year 1895, has made many investigations in the N.-E. corner.

Fully twenty years have elapsed since a circular was sent to the Belfast Naturalists' Field Club by Professor Kendall, Secretary to the British Association Erratic Block Committee, requesting the Club to co-operate by examining the Glacial deposits of this district. A ready response was at once made by the Club, and a collection of Irish rocks commenced, in order to assist in the identification of the parent localities from which the erratics might have travelled, specimens of Scottish rocks likely to be met with being presented by Professor Kendall. A room was acquired at the Museum where meetings could be held and the collection of erratics and implements stored. The patient accumulation of a multitude of details on many points was willingly undertaken by many members of the Club, as well as by the little group specially appointed. Erratics from outlying districts were received from time to time, invaluable assistance being also given by the late Mr. S. A. Stewart, A.L.S., F.B.S.E., and Mr. Joseph Wright,

F.G.S., whose works on the Molluscs and Foraminifera of our Boulder Clays rank amongst the classics of British Glacial literature. Madame Christen contributed a summary of recent Glacial investigations by the Geological Section, which was published in the Club's Proceedings for 1905-6. Mention must also be made of the late Miss M. K. Andrews, whose patient and long persevering zeal is well known to the Members of the Club, as is also the work she accomplished in Glacial Geology.

As a result of the above efforts many Field Club excursions took place, and meetings were held where papers were read and specimens examined. We have now over 200 different erratics in our Club collection, a good many of which are undoubtedly Scottish in their origin.

I would like to bring before new Members some of the finds I have made since the Geological Section started.

In the year 1902 I discovered in Sluggan Bog a jelly like mass which puzzled me. It was sent to Mr. Richard Moss, of Dublin, who determined it to be "Dopplerite." This mineral was new to the British Isles, and was named "Dopplerite" after Herr Doppler who first discovered it in Germany. It was honoured by being described in a paper by Mr. Moss which he read before the Royal Dublin Society in 1903.

In the year 1908 my attention was drawn by Mr. W. H. Wickes of Bristol to the occurrence of the mineral named "Beekite" on certain fossils which the latter had discovered in the south of England. On examining my own collection of local fossils I was agreeably surprised to find on several of my specimens a development of this mineral, especially on *Exogyra columba* (Lam.), which is an oyster found in the Chloritic Sands of the Upper Cretaceous.

In 1909 I discovered at Cat-Cairn, Ligoniel, another mineral new to Ireland, a rhyolite named "Gyrolite." It formed the subject of a paper by Mr. F. N. Ashcroft, which he read at the Mineralogical Society and published in the *Mineralogical Magazine*.

I also discovered in the Basalt of Killyleagh a mineral named "Phacolite." This mineral was also brought before the Mineralogical Society and is new to Ireland.

In July of this year (1921) I discovered in the Lignite deposits of Lough Neagh a trunk of lignite partly silicified. This is the first time it has been seen since 1751, when it was found by G. D. Barton, and described in his famous lecture on the "Petrifactions, Gems, and Crystals of Lough Neagh."

This discovery proves that the silicified wood that we find round Lough Neagh's banks comes from the Lignite beds.

Mr. W. A. Green read the following interesting address on the claims of

PHOTOGRAPHY AS AN AID TO NATURE STUDY.

There are many members in the Club, who, like myself, have never devoted themselves to research work on strictly scientific lines, either from want of sufficient time or from want of knowledge, but who, from the love of Nature and her works, are keenly interested in all branches of Natural History study and whose privilege it is from time to time to add valuable items of information to those who not only study themselves, but record and tabulate for the use of future students such information as they acquire themselves or that may be brought to their notice.

Therefore I hold that, in a Club such as ours, every individual has a place, and that we can all contribute our quota to the general knowledge.

Now that the war is over, and that we are once more at liberty to use our cameras, it struck me that here was a way in which many of us could obtain valuable records for future reference. I am quite well aware that our good friend Mr. Welch has set us a standard which none of us are likely to attain, both in the unapproachable excellence of his work and the untiring pertinacity with which he sought out and recorded everything

which he considered might benefit the Club's work, now or in the future, and I most sincerely regret that he has so completely withdrawn himself from scientific work. We miss his kindly face among us in our meetings and excursions, and I for one would welcome the time when he would once more associate himself with us.

But to come to a concrete suggestion. I am quite aware that there are a number of albums belonging to the Club in which photographs of the places of interest visited on excursions were placed. These were sometimes on view at the conversaziones and contain most excellent views, taken and contributed by Members of the Club.

Now I should like to see this revived, but in a slightly different way. I would suggest:—one album for Botany, one for Geology, one for Zoology, and one for Archæology.

It is a pity to clear out the rare plants in a district, but photographs, with full particulars and name of donor, would form a lasting record, and besides, the very act of photographing them gives one a most intimate knowledge of the conditions under which the plant lives and its surroundings, a knowledge not always obtained by merely pulling and pressing them. Then again—in Zoology say—there is a wide field for photography, in the habitats of various creatures, and also a knowledge to be gained incidentally of their economic values. For example, my boy and I went to the Ballinderry river in Co. Derry a couple of months ago, where, as we understood, the pearl mussel could be obtained. We spent two days about the river, and were initiated into the mysteries of mussel fishing by the people of the district. We photographed men on the river fishing for them and saw the flat bottomed boats used by the pearl hunters.

Some years ago I happened to be in the Toome district, doing some general photography, and saw some people steeping flax. I was sufficiently interested to take a photograph, and the friend who was with me told me that the scutching stock was still

in use in that locality. To make a long story short, I stayed a fortnight with him, and he drove me round the district. I got pictures of several of the old methods used in the country in the manipulation of flax—hand scutching, breaking, cloving, hand heckling, etc. Curiously enough most of the people engaged in these primitive operations are since dead, and as they appeared to be the last to use them I think they are now obsolete. In the same district I also got photos of an Old Irish Corn Custom, "Cutting the Calliagh," which, as you know, is mentioned in the late Miss Andrews' book.

I may be pardoned for referring so much to myself, but I wish to point out that even if our work falls short of the high standard of merit which we should like to attain, still the records in themselves are of value, perhaps to future generations, to illustrate old customs of our country that have passed for ever away.

If my suggestion commends itself to the Club, I would propose that an Honorary Keeper of Prints should be appointed to whom should be sent any photographs—no matter what size—of scientific interest to the Club, with full particulars, including date. These should be posted in the album set apart for the particular subject, and such album should be produced from time to time at the Club's meetings and Conversazioni.

Mr. J. Skillen urged the claims of

ARCHÆOLOGY,

referring at some length to the work done in this department by Mr. W. J. Knowles, M.R.I.A., of Ballymena; and by the late Dr. Buick. He also mentioned several localities in which good work still remained to be done, as, for instance, in the Kitchen Middens of Whitepark Bay and among the sand dunes of Portstewart.

The Rev. W. R. Megaw spoke on

BOTANY;

and appealed for more workers among the Mosses and Hepatics,

recommending H. N. Dixon's "Handbook of British Mosses," 2nd edition, as a reliable guide to the student. He pointed out that workers in this department could find great assistance by supporting the various Moss Exchange Clubs now in existence.

The Hon. Secretary (A. M'I. Cleland) supported W. A. Green in his remarks on Photography, and showed a number of interesting prints of buildings, etc., now no longer in being, and urged, in particular, that a systematic record should be made of local Geological features of the district.

AT HOME WITH FUR AND FEATHER.

The third ordinary meeting of the Winter Session was held in the Museum, College Sq. N., on Tuesday, 20th December, when Mr. E. A. Armstrong, B.A., delivered a lecture on above subject. The chair was occupied by the Vice-President (Rev. W. R. Megaw, B.A.), who, before introducing the lecturer, referred to the recent losses the Club had sustained through the deaths of Mr. Joseph Malcomson and Mr. E. F. Green, votes of condolence being passed to the relatives of both families.

The lecturer explained at the outset that he had entitled his lecture "At Home with Fur and Feather" because, in the first place, he was going to speak of and show pictures of the birds "at home," at their nests or with their young; and secondly, he had tried to become specially intimate with birds and mammals, to become "at home" with them by living amongst them. He showed how by sleeping in a small tent, or merely between ground sheets in the birds' haunts he was able to study and photograph the different species, and he recommended this plan to all who wished to get a real insight into the wonders of nature. He pointed out that his photographs were taken with a small hand camera, showing that bird photography need not be confined to affluent experts; he mentioned that he had found it possible to give long exposures on birds on their nests in shady places owing

to the fact that when a sitting bird hears the click of the shutter she remains still in an alert attitude for a considerable period

The remainder of his lecture dealt with mammals and birds to be found:—(1) About the home or garden. (2) On the shores of Lough Neagh. (3) At Strangford Lough. (4) In Epping Forest.

Under (1) he showed photographs of a Robin on its nest in a rather unusual situation—among Honeysuckle and Jasmine on a wall some 14ft. from the ground. The birds had been frightened by rats from their original nest in a bucket on the ground. Some would like to attribute the selection of the safer position to “reason,” but he believed that it was due to an instinct “to seek safety higher.” Photographs of a Willow Warbler which had lost its tail and of a Wren which, falling into a lake was able to swim ashore, were shown. Other pictures showed Greenfinch on nest, Spotted Flycatchers, Blue Tits, Hedge Sparrow on nest, Blackbird, Thrush, Jackdaw, Rooks nest-building, etc. A photograph of a Raven was shown, and the lecturer mentioned that a pair frequented the hills near Belfast. The Chough also he had observed in the district.

Under (2) he dealt with land and water birds to be found at Lough Neagh. Pictures were shown of Wild and Tufted Ducks and their nests. The last-named has happily increased in numbers in the district during recent years. The Snipe was found nesting, and a picture was shown of a well grown young bird which, nevertheless, was diligently tended by its mother. This young bird deliberately swam a ditch. He spoke of the destructiveness of Magpies, and showed a photograph of two well grown Wood Pigeons which were shortly afterwards devoured by these greedy marauders. One of his pictures showed a Dabchick covering its eggs with weed on leaving them. When frightened from their nests these birds would remain away for some time, and eventually creep closer, reconnoitring with head and neck only exposed. Then one would at length waddle on to the nest

while the other kept in the vicinity. The bird would pile more weed over the eggs and leave them but would very shortly return and sit. The local name of this bird is "Dam Pudden," an appropriate name bespeaking accurate observation of the Dabchick when out of the water. A family of Coots was shown—difficult birds to photograph. The Pheasant, Waterhen, Heron, etc., were other birds shown and described. Ram's Island and its avifauna were also dealt with. The Badger and Irish Hare were depicted and described.

Under (3) he spoke of and showed many of the birds which breed on the Islands of Strangford Lough. A Kestrel in flight was shown depicting how the bird when gliding opens both primaries and secondaries of the wings. Nests of Tern, Ring Plover, Oystercatcher, Herring Gull, (showing young emerging from egg), and Red-breasted Merganser were shown. Various studies of the Merganser, a very beautiful bird, were screened. The lecturer had photographed it plucking the down from its breast. Young Rock Pipits and Redshank were also shown.

Dealing with the fauna of Epping Forest the lecturer described his photographs of Follow Deer and Fox. He mentioned that so close to London, the Fauna was, none the less, rich and varied, largely due to the protection afforded by the enforcement of recent legislation.

At intervals records of the songs of Blackbird and Thrush were heard (thanks to the kindness of Mr. T. Edens Osborne). The lecturer also imitated the notes of Woodpigeon, Woodpecker, Brown Owl, Raven, Curlew, Ringed Plover, etc.

The excellent series of lantern views exhibited were all made and coloured by the lecturer.

At the conclusion of the lecture an interesting discussion ensued, in which the Vice-President and Messrs. J. A. S. Stendall, M.B.O.U., J. Loughridge, H. Coey, and J. Holness took part, the proceedings terminated with the election of one Associate and five Ordinary Members.

SPIDERLAND.

The fourth ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 17th January, when a lecture was given, entitled "Spiderland," by Mr. J. A. S. Stendall, M.B.O.U., the chair being occupied by the President (Mr. S. A. Bennett, B.A., B.Sc.). Before calling upon the lecturer, the names of Mr. Robert J. Welch, M.R.I.A., and Professor J. K. Charlesworth, D.Sc., Ph.D., M.R.I.A., were put before the meeting for election as Honorary Members, this being passed unanimously.

The lecturer in his early remarks outlined the characteristics of the spider group, following this with details of their life history, explaining that unlike insects spiders undergo no metamorphosis, but leave the egg as tiny spiders which undergo a series of moults, usually nine in number, before becoming adult. The young are soon able to look after themselves, and their activities among several different species were described. In the case of the snare-builders, the tiny spiders, after hatching out within a silken egg sac, live in harmony for a little while, but after the first moult, which takes place within the sac, they become voracious and will attack and eat each other with impunity. The egg sac of the hunting wolf spider is carried about by the mother, attached to her body by a silken thread, and the young on hatching are carried about on the parents' back until strong enough to fend for themselves.

The lecturer went on to explain the curious migration habit existing among the young of all spiders, irrespective of species. This migration is accomplished on a calm sunny day, when the young ascend to some high point, anchor themselves, turn their bodies skywards, at the same time emitting from their spinnerettes streams of silk. These float upwards and eventually exert a pull and lift the little animals into the air, after they have snapped the anchor lines. In this manner they travel to pastures new. These fine threads floating through the air are generally termed "gossamer."

Poison facts and myths were discussed, the lecturer stating that any spider living in the British Isles could be handled with impunity, but some foreign species were doubtfully dangerous though probably not to a healthy person. Specimens of what is regarded as a really deadly species *Latrodectus scelio* Thor., of Australia and New Zealand were exhibited. This animal is known among the natives as "Katipo" and by them is greatly feared.

Methods of snare construction were afterwards explained; also the wiles adopted by different species for the capture of their prey.

In some species spider courtship, it was stated, is not altogether a pleasant occupation, at least not for the male, as he is liable to be eaten by the female if deemed unsuitable, or if she happened to be "moody." Among all spiders the female is the larger, except in the case of the water spider *Argyroneta aquatica*, Latr., the extraordinary habits of which the lecture explained in detail.

The [description of the activities of the trap-door spider created much interest as also did the fact that we have in these islands a species *Atypus affinis*, Eich., which, while not actually constructing a trap door, lives its life in a tubular retreat dug in the ground. Instead of making a trap this spider continues the silken lining of the burrow into an aerial tube, from within which it captures its prey, dragging this through the silken wall which is afterwards repaired.

The lecturer in his concluding remarks dealt briefly with spider instinct and intelligence.

A large series of coloured lantern slides were used to illustrate the lecture; these greatly adding to its interest. At the conclusion a remarkable Kinema film showing spiders performing various operations, including the building of snares and the capture of prey, was shown and highly appreciated.

At the conclusion of the lecture a short discussion followed in which the President, Messrs. Hoskins and Holness, and the

Hon. Secretary took part, the proceedings terminating with the election of four new Ordinary Members.

RADIO-ACTIVITY IN RELATION TO GEOLOGY.

The fifth ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 21st February, when Mr. J. C. A. Brierley, M.Sc., gave an interesting lecture on the above subject, the chair being occupied by Mr. J. A. S. Stendall, M.B.O.U., in the absence of the President (Mr. S. A. Bennett, B.A., B.Sc.) through indisposition.

Starting with the discovery of helium in the sun's atmosphere, by Sir Norman Lockyer, the lecturer gave the history of the observations of the photographic and electric effects of certain minerals; the separation of helium by Hildebrand, and its subsequent identification as helium by Lockyer and Ramsay. The discovery and identification of argon by Rayleigh and Ramsay, and the separation of the crude argon into argon, krypton, xenon, and neon, were described, and the identification of radium "emanation" as niton was demonstrated; these six new elements filling their respective vacant spaces shown in the periodic law of Newlands and Mendeleeff, thus proving that no further member of this group remains unknown.

The lecturer then dealt with M. and Mme. Curie's well-known work on pitchblende and other uranium minerals and the discovery of radium, afterwards describing the earlier work of Becquerel and Crookes on the "Becquerel rays," demonstrating their analysis into alpha, beta and gamma rays, and following up with the discovery of polonium and ionium, and the identification of the latter as an "isotopic" form of lead.

The work of Rutherford and Soddy on thorium and the separation of radio-active thorium X were described, and then the electric charge, mass and velocity of the α particles, and the fact that the α particles were positively charged helium atoms demonstrated. The filtration and counting of the α particles,

and the filtration, imponderability and velocity of the β rays were demonstrated, and the rate of growth and also decay of radio-activity described and explained.

The effect of current and magnetic electricity upon the α and β rays and the deductions drawn therefrom lead to a discussion of the modern conception of the construction of the atom, and finally in considering the varying radio-activity and the products thereof found in different geological strata, minimum estimates of the ages of the various strata of the crust of the earth were given, these minima being stated as from 850 million years to about twice that number.

The lecture, which was listened to with great attention, was fully illustrated by a fine series of lantern diagrams and at its close a hearty vote of thanks was tendered to the lecturer.

CONVERSAZIONE.

The fifty-ninth Annual Conversazione and Exhibition was held on Tuesday, 28th March, when a company of 160 members and friends met in the Carlton Hall at Six p.m. Owing to the late date at which the meeting was held, and the effects of Summer Time, the first portion of the three hours during which the Conversazione lasted had the advantage of good daylight, enabling the exhibits to be seen very well indeed.

The following exhibits were shown :—

ZOOLOGY.—Skulls of mammals, by Mr. J. Orr; Irish land and freshwater mollusca, by Mr. R. J. Welch, M.R.I.A.; a very fine set of exquisitely mounted objects showing the "Life Histories of Insects," by the late Mr. E. F. Green (a junior member of the Club), exhibited by special request; twenty-one species and varieties of cowry shell *Cypræa* and fan mussels *Pinna nobilis* by Mr. A. M'I. Cleland; slough of grass snake, by the President (Mr. S. A. Bennett, B.A., B.Sc.); lac produced on palas ree *Butea frondosa*, by an insect of the order Hemiptera, *Tachardia lucæ*, forming shellac of commerce, from India; also aberration

of dark-green fritillary *Argynnis aglaia* L., from Portballantrae, Co. Antrim, described in "Irish Naturalist," vol. XXX., p. 15; also cases of Indian butterflies, by Mr. W. M. Crawford, B.A., I.C.S., F.E.S.; cases of trap-door spiders and bird-eating spiders; also oblong giant snail *Bulimus oblongus* with eggs and young, by Belfast Municipal Museum; nests and eggs of common tern, ring plover, and oyster-catcher in their natural habitats, arranged and very finely tabled, by Mr. J. A. S. Stendall, M.B.O.U.; wing and tail feathers of immature female hen-harrier *Circus cyaneus* L., by Dr. C. J. Milligan, shot on Divis Mountain, 13th August, 1921.

BOTANY.—Mounted grass seeds; mounted fruits of *carices*; local fumitories and rarer *carices*, with distribution maps, by the President (Mr. S. A. Bennett, B.A., B.Sc.); mounted specimens and photographs of local plants of Co. Down and Co. Antrim, by Mr. N. Carrothers; common sedges, by Mr. J. R. H. Greeves; specimens of the genus *Hypnum*, by Mr. Wm. Porter; curious form of dandelion root, by Mr. J. Glover; exhibit illustrating the action of carbon dioxide upon the development and growth of root and shoot, by Prof. J. Small D.Sc., M.R.I.A.; microscopical slides illustrating botanical subjects, by Miss W. Sayers, B.A.; selection of English plants not found in Ireland, by Capt. C. D. Chase, M.A.

GEOLOGY.—Collection of minerals and fossils made sixty years ago, by Patrick Doran; also Carboniferous corals, plain and polished, by Mr. C. Bulla; calcite and Fontainebleau sandstone, by Mr. D. J. Carpenter; sections of Lower Ludlow bone-bed, from Stokesay, Shropshire; also white basalt, from Kinghorn, Fife, and Carboniferous Limestone, containing vegetable matter, out of bed of volcanic material, from Kinghorn, Fife, by Mr. A. M'I. Cleland; levine, from Wolfhill and chabazite, from Magheramorne; also smoky quartz and topaz, from Mourne Mountains, by the President (Mr. S. A. Bennett, B.A., B.Sc.); photographs, showing glacial action in the Swiss Alps, by Mr. T. E. Osborne, F.R.S.A.I.; minerals from Counties Antrim and London-

derry, including stilbite, natrolite, etc., by Mr. R. Bell, H.M.Min.S.; plant remains from the interbasaltic beds at Glenavy, by Mr. W. A. Green, F.R.S.A.I.

ARCHÆOLOGY.—Flint axe-head from Marlborough Park; also Indian copper celt, B.C. 1080, by Mr. W. M. Crawford, B.A., I.C.S., F.E.S.; flint flakes, from Larne raised beach, by Mr. R. H. Common; prehistoric stone cleaver found in the Kitchen middens at Tranarossan, Co. Donegal, in 1921, by Mr. W. A. Green, F.R.S.A.I.; stone implements and old Irish lamps, by Rev. Canon Carmody, M.A.; prehistoric implements from Black Mountain and Holywood, also illustrations of flint implements excavated at Abydos, by Mr. T. E. Osborne, F.R.S.A.I.; typical collection of local flint implements, by Mr. W. Duncan.

Among the historic exhibits may be mentioned the following—A fine collection of old books, tabled by Mr. A. A. Campbell, F.R.S.A.I., including the “Northern Whig,” vol. I., 1824; “Strabane Morning Post,” from 1812; “The Microscope,” a Belfast magazine of 1800; “Claimants’ names adjudged Premiums for Growing Flax,” 1796; “Captain Rock in London,” 1825; “Poems of the Rev. John Graham,” 1829. Miss Mawdsley showed a fine sampler in its original frame and glazing, dated 1776; also collection of Maunday money and ancient Welsh alms dish. Mr. C. Bulla showed three bound volumes of “John Bull” for 1820-22.

The miscellaneous exhibits included:—Optical lantern for projecting reflected objects, by Belfast Art Society, per Miss M. Armstrong; portable electric photo lantern, by Messrs. Lizars; a large collection of local photos by various members of the Club; a beautiful set of hand-painted photos of Irish scenery, by Mr. W. A. Green, F.R.S.A.I.; playing cards, from Orissa, India, by Mr. W. M. Crawford, B.A., I.C.S., F.E.S.

The Junior Section of the Club was very well represented, the exhibition including:—Miss Hoskins (photos, bird’s eggs, nest of thrush, fossils and flint implements); Messrs. W. W. Walsh

{birds' eggs); R. Crawford (leaves of trees); M. P. Crawford {local plants); W. J. M'Knight (bird's eggs); J. H. Rea (photos and flint implements); Miss Gracie M'Conkey (fossils from Lough Neagh district); Miss Jean Mulligan (local plants).

Tea was served in the Restaurant punctually at 8-15 p.m., after which the President (Mr. S. A. Bennett, B.A., B.Sc.) gave a short address, in which he reviewed the work of the past Session. With the election of five new members a most enjoyable evening was brought to a close.

BIRDS: EXTINCT AND LIVING.

The Sixth, and concluding, ordinary meeting of the Winter Session was held in the Museum, College Square, N., on Tuesday, 21st March, when Mr. Nevin H. Foster, M.R.I.A., F.L.S., M.B.O.U., gave a most interesting lecture on the above subject. The chair was occupied by the President (Mr. S. A. Bennett, B.A., B.Sc.), who, before introducing the lecturer, referred to the fact that two Members (Mr. A. Deane and Professor J. Small) had recently been elected Members of the Royal Irish Academy; also the Hon. Treasurer (Mr. T. E. Osborne) had been elected a Member of the Royal Society of Antiquaries of Ireland, and the Hon. Librarian (Mr. W. M. Crawford) a Fellow of the Entomological Society.

Mr. Foster said that in the system of zoological classification birds constitute a *Class*, and that the easiest of diagnosis, for all birds were clothed in a garment of feathers, and further, a feather was a structure only found on birds.

It was believed that in the long past ages birds had evolved from reptiles, for the skeletons of both bear a close affinity; but birds had progressed much further as, owing to their possessing a four-chambered heart, they were able to keep their bodies at an uniform temperature despite the varying heat of their surroundings. Birds and mammals agreed in this respect, and together were classed as warm-blooded animals. The covering of reptiles con-

sisted of scales, and it is probable that the feather has been developed from a frayed scale. Though of this no actual proof could be advanced, it was worthy of note that the feet and legs of birds are still covered with scales similar to those borne by reptiles.

Prior to the geological period known as the jurassic no remains of any animal higher than a reptile had been discovered, but in the Bavarian rocks of that era was found, in 1861, a fossil of an undoubted bird. This fossil is now in the British Museum, and another fossil of the same species * found a few years afterwards is deposited in the Berlin Museum. From these two fossils it was possible to make the picture, shown on the screen, of the oldest known bird, the *Archæopteryx*. This bird, which was about the size of a rook, was clothed in feathers precisely the same as are found on all birds, but it showed remarkable differences to all living birds in the possession of true teeth in the jaws and the structure of the tail. Other extinct birds alluded to included the *Hesperornis*, *Ichthyornis*, *Moa*, *Dodo* and the *Garefowl*, or *Great Auk*, etc., bones of the last named of which had been found in Co. Antrim.

Mr. Foster then proceeded to speak about some living birds, choosing for representation a few species found respectively in Europe, Asia, Africa, and Australasia. Of the European birds mentioned some, like the Crane and Spoonbill, had formerly nested in England; others were casual visitors to our shores; but the Lammergeyer or Bearded Vulture had never been known to visit us. Among Asian species the peculiar nesting habits of the Hornbill and Tailor-Bird were described. Africa was represented amongst others by the largest living bird, the Ostrich. Humming Birds were only to be found in America and the adjoining islands, and in brilliancy of plumage some of them were unsurpassed by the birds of any clime. Some dozen species from

* Recent research has shown that the Berlin specimen is not only specifically but even generically different from the London specimen. The latter, which is a more primitive form, retains its name while *Archæornis* is proposed for the Berlin fossil.

Australia, Papau and New Zealand were chosen to represent the Australasian avifauna. Among these the gorgeous colouring and peculiar feather structure of some of the Birds of Paradise were spoken of. The lecturer concluded by a reminiscence of a visit to Lord Rothschild's Museum, Tring, where a case of Birds of Paradise bears witness to the skill in taxidermy of our fellow townsman, Mr. Sheals.

The lecture was illustrated by a series of very fine slides, and at its conclusion a short discussion followed in which Messrs. J. A. S. Stendall, M.B.O.U., J. Holness, and S. M. Macoun took part. The meeting concluded with the election of Mr. John Vinycomb, M.R.I.A., as Honorary Member, and Messrs. G. W. C. Porter and W. J. Knight as Ordinary Members.

ANNUAL MEETING.

The Annual Meeting was held in the Museum, College Sq. N., on Tuesday, 25th April, at 8 p.m., Mr. J. A. S. Stendall, M.B.O.U., in the chair during the earlier part of the proceedings, there being a good attendance of members.

The Annual Report, Hon. Treasurer's Statement, Hon. Librarian's Report and the Report of the Hon. Sec. of the Junior Section having been read, it was proposed by Mr. F. Adens Heron, J.P., seconded by Mr. F. W. Walker, and resolved, that these Reports be adopted, printed and circulated as usual.

It was proposed by Mr. J. A. S. Stendall, M.B.O.U., seconded by Mr. A. Albert Campbell, F.R.S.A.I., and unanimously resolved that Rev. W. R. Megaw, B.A., be elected President for the ensuing year.

On taking the chair the President referred to the good work Mr. S. A. Bennett, B.A., B.Sc., President for the past two years, had done for the Club, and on the motion of Mr. R. J. Welch, M.R.I.A., seconded by Mr. A. Percy Hoskins, F.I.C., F.C.S., it was resolved that the best thanks of the members be tendered to Mr. Bennett for his services.

The election of the remaining office-bearers for 1922-23 was then proceeded with, the following selections being made :—Vice-President, Mr. J. A. S. Stendall, M.B.O.U. ; Hon. Treasurer, Mr. T. Edens Osborne, F.R.S.A.I. ; Hon. Librarian, Mr. W. M. Crawford, B.A., I.C.S., F.E.S. ; Hon. Secretary, Mr. A. M'I. Cleland ; Hon. Sec. for Geology, Mr. R. Bell, H.M.Min.S. ; Hon. Sec. for Botany, Mr. S. A. Bennett, B.A., B.Sc. ; Hon. Sec. for Zoology, Mr. W. A. Green, F.R.S.A.I. ; Hon. Sec. for Archæology, Mr. A. Albert Campbell, F.R.S.A.I. ; Hon. Sec. for Junior Section, Mr. J. R. H. Greeves ; Ordinary Members of Committee : Miss S. Blackwood, Prof. J. K. Charlesworth, D.Sc., M.R.I.A. ; Mr. F. Adens Heron, J.P. ; Mr. A. Percy Hoskins, F.I.C., F.C.S. ; and Mr. Wm. Porter.

Notice of motion having been handed in by Mr. J. A. S. Stendall, M.B.O.U., he moved that Rule IV. be amended as follows :—"That not more than two Honorary Members be elected in any one year." The motion was seconded by Mr. S. M. Macoun and carried.

There was on view during the evening a fine collection of mounted photographs on loan from the North Staffordshire Field Club. The Hon. Secretary showed portion of a Cephalopod *Orthoceras bisiphonatum* recently taken from boulder clay during excavations at the Gas Works. Mr. R. J. Welch, M.R.I.A., exhibited an album containing almost one hundred book-plates designed by Mr. John Vinycomb, M.R.I.A., an Hon. Member and Past President of the Club. These included a number of book-plates of well-known Irish naturalists and antiquarians. Mr. Welch also showed a photo chess-board, the dark squares of which were nature-printed Irish ferns, the light squares circular family portraits ; also a large oval decorated wall panel of gold and silver ferns, with Irish grasses and mosses, mounted on claret coloured velveteen, the pile of the fabric holding the ferns, etc., in position without any paste or gum, thus avoiding fungus growth.

With the election of two new Ordinary Members a very successful meeting was brought to a close.

RULES

OF THE

Belfast Naturalists' Field Club.

As amended at General Meeting held 25th April, 1922.

I.

That the Society be called "THE BELFAST NATURALISTS' FIELD CLUB."

II.

That the object of this Society be the practical study of Natural Science and Archæology in Ireland.

III.

That the Club shall consist of Ordinary, Junior, Life, Corresponding and Honorary Members. The Ordinary Members shall be proposed and seconded at any ordinary meeting of the Club, and such members may be elected at the next ordinary meeting following, by a majority of votes, provided that in the meantime the first Annual Subscription has been paid. They shall pay annually a subscription of Five Shillings. Members who are twelve months in arrear in their subscriptions shall not receive any further circulars or other printed matter.

That the composition fee for Life Membership be Four Guineas.

Junior Members, who must be between the ages of 12 and 21, shall be elected in the same way as Ordinary Members, but shall pay annually a subscription of One Shilling (1/-) from 12 years of age to 18, and a subscription of Two Shillings and Sixpence (2/6) from 18 years of age to 21. Junior Members shall not receive any printed matter except the usual notices; shall not have the power to vote; and shall not borrow books from the Club's Library without special permission from the Librarian. On attaining their majority they shall become Ordinary Members, and shall pay an annual subscription of Five Shillings (5/-).

IV.

That the Honorary and Corresponding Members shall consist of persons of eminence in Natural Science, or who shall have done some special service to the Club; that such Members may be nominated by any Member of the Club, and on being approved by the Committee, may be elected at any subsequent Meeting of the Club by a majority of the votes of the Members present. That not more than two Honorary Members be elected in any one year. That Corresponding Members be expected to communicate a paper once within every two years.

V.

That the Officers of the Club be annually elected and consist of a President Vice-President, Treasurer, Librarian, and one or two Secretaries, together with the Secretaries of the various Sections of the Club. That the office of President or that of Vice-President shall not be held by the same person for more than two years in succession.

VI.

That the General Committee shall consist of the above-named officers with nine ordinary members of Committee, and shall hold at least eight meetings during the year; five persons to form a quorum.

That three ordinary members of Committee shall retire annually in order of seniority, those retiring being ineligible for re-election for one year. Should any ordinary member of Committee fail to attend at least three of the Committee meetings held during the year his or her place may be considered vacant and another member elected to fill the position. No ordinary member of Committee shall hold the post of Secretary in any of the Sections. That in the event of a vacancy occurring in the General Committee a new member may be co-opted to fill such vacancy for the remainder of the year.

That nominations for ordinary members of Committee shall be sent in writing to the Secretaries on or before the 21st day of March in each year. That the privilege of nominating members of Committee shall be held by all Ordinary and Life Members of the Club. That the names of those members so nominated shall be published on the circular convening the Annual Meeting, at which the Ordinary Members of Committee shall be elected by ballot. That should the necessity arise the retiring members of Committee shall be balloted for.

VII.

The Committee may from year to year appoint Sectional Secretaries and Committees, as may be considered desirable, to further original investigations in any one or more departments of the Club's work. No financial responsibility to be incurred by any Sectional Secretary, Sectional Committee, or any Officer of the Club without the previous approval of the Club's Committee. The Junior Section to have a Committee composed of Six Members of the Club, the Chairman to be annually appointed by the General Committee.

VIII.

That the members of the Club shall hold at least Six Field Meetings during the year, in the most interesting localities, for investigating the Natural History and Archaeology of Ireland. That the place of meeting be fixed by the Committee, and that five days' notice of each Excursion be communicated to Members by the Secretaries. That each of the Sectional Secretaries shall be made responsible for the running of one Regular Excursion, the programme to provide study in the subject appertaining to the Section, and that any additional Special Excursions shall be arranged by the Secretaries of the Sections concerned.

IX.

That regular Monthly Meetings be held during the Winter Session from November till April, inclusive, for the purpose of reading Papers; such Papers as far as possible to be original, and to treat of the Natural History and Archaeology of the district. That the Papers to be read be secured by a Standing Organising Committee, consisting of the Hon. Secs. of the Club, together with the Sectional Secretaries and a Chairman. That between the Regular Monthly Meetings of the Club Special Meetings open to all Members of the Club may be held, at which Papers of specialised interest would be discussed. That the Sectional Secretaries shall each be responsible for the providing of a programme for one Regular and one Special Meeting, one Regular and one Special Meeting to be arranged by the Hon. Secs. Any extra Meetings shall be arranged by the Organising Committee, if desired. That the programme for the Winter Session shall be completed by the date of its First Meeting and issued to all Members. That each notification announcing a Regular Meeting or Excursion shall also serve to notify Members of the next Special Meeting or Excursion.

X.

That the Committee shall, if they find it advisable, offer for competition Prizes for the best collections of scientific objects of the district; and the Committee may order the purchase of maps, or other scientific apparatus, and may carry on geological and archaeological searches or excavations, if deemed advisable, provided that the entire amount expended under this rule does not exceed the sum of £10 in any one year.

That the General Committee may offer from time to time such prize or prizes as they may deem desirable for competition among Schools in or near Belfast.

XI.

That the Annual Meeting be held during the month of April, when the Report of the Committee for the past year, and the Treasurer's Financial Statement shall be presented, the Committee and Officers elected, Bye-laws made and altered, and any proposed alterations in the general laws, of which a fortnight's notice shall have been given, in writing, to the Secretary or Secretaries, considered and decided upon. The Secretaries to give the Members due notice of each intended alteration.

XII.

Members of other Irish Field Clubs, residing temporarily or permanently in or near Belfast, may be enrolled as Members of the Club without election or entrance fee on production of a voucher of membership of another Club, and without subscription for the current year, on production of a receipt showing that such subscription has been paid to another Club. Failing the production of such receipt, the usual subscription for the current year to be paid to the Treasurer on enrolment. The names of Members so admitted to the Club to be published with the notice of meeting following the date of their enrolment

XIII.

That, on the written requisition of twenty-five Members, delivered to the Secretaries, an Extraordinary General Meeting may be called, to consider and decide upon the subject mentioned in such written requisition.

XIV.

That the Committee may be empowered to exchange publications and reports, and to extend the privilege of attending the Meetings and Excursions of the Belfast Naturalists' Field Club to Members of kindred societies, on similar privileges being accorded to its Members by such other societies.

RULES FOR THE CONDUCTING OF EXCURSIONS.

I. The excursion to be open to all Members, each one to have the privilege of introducing two friends. The time for commencing as many as possible of the Half-Day Summer Excursions to be not prior to 2 p.m.

II. A Chairman to be elected as at ordinary meetings.

III. One of the Secretaries to act as Conductor, or, in the absence of both, a Member to be elected for that purpose.

IV. No change to be made in the programme, or extra expense incurred, except by the consent of the majority of the Members present.

V. No fees, gratuities, or other expenses to be paid except through the Conductor.

VI. Every Member or Visitor to have the accommodation assigned by the Conductor. Where accommodation is limited, consideration will be given to priority of application.

VII. Accommodation cannot be promised unless tickets are obtained before the time mentioned in the special circular.

VIII. Those who attend an excursion without previous notice will be liable to extra charge, if extra cost is incurred thereby.

IX. No intoxicating liquors to be provided at the expense of the Club.

Exchanges of Proceedings, 1921=22.

Belfast—Natural History and Philosophical Society.

Report and Proceedings for 1918-19.

„ Presbyterian Historical Society of Ireland.

Irish Presbyterian Magazine (1919).

300 years of Presbyterianism in Ireland (1613-1913).

The Presbyterian Historical Society : Its Story and Aim.

Annual Reports for 1919, 1920, 1921.

Birmingham—Natural History and Philosophical Society.

Proceedings, Vol. XIV., Part 4. List of Members (1919), and
Annual Report (1920).

Bournemouth—Natural Science Society.

Vol. XI. (1918-19) and XII. (1919-20).

Brighton and Hove—Natural History and Philosophical Society.

Report for 2 years ending 1920.

Bristol—Naturalists' Society.

Proceedings, 4th Series, Vol. V., Parts 2 and 3.

Laws revised to 1920.

Cardiff—Naturalists' Society.

Transactions, Vols. L. (1917) and LI. (1918).

Chester—Society of Natural Science, Literature and Art.

Annual Reports Nos. 49 (1919-20) and 50 (Jubilee, 1920-21).

Dublin—Royal Irish Academy.

Proceedings, Vol. XXXV. Sec. B., Nos. 3 to 11.

Sec. C., Nos. 6 to 12.

Dublin—Royal Society of Antiquaries of Ireland.

Journal, Vol. XLIX, Part 2 : Vol. L., 1 and 2 ; Vol. LI., 1 and 2.

Dumfriesshire and Galloway—Nat. Hist. and Antiquarian Society.

Transactions, Series III., Vol. VII.

Eastbourne—Natural History, Photographic and Literary Society

Transactions and Journal, Vol. VIII., Nos. 26 and 32.

Edinburgh—Geological Society.

Vol. XI., Part 1 (1920).

Essex—Field Club.

Essex Naturalist, Vol. XVIII., Nos. 6 to 12; Vol. XIX. Nos.
3, 4, and 5; Vol. XX. No. 1.

Glasgow—Royal Philosophical Society.

Vol. L. (1918-20).

Halifax, Nova Scotia—Institute of Science.

Proceedings and Transactions, Vol. XIV., Part 4; Vol. XV.
Part 1.

Leyden—Rijks Ethnographisch Museum.

Reports for 1918-19 and 1920.

Liverpool—Geological Society.

Vol. XIII., Parts 1 (1919-20) and 2 (1920-21).

London—British Association.

Report of Conference of Delegates, 1921.

„ British Museum.

Economic Series, Nos. 9, 10, and 11.

„ Geologists' Association.

Proceedings, Vol. XXXI., Parts 2, 3, 4; Vol. XXXII., Parts 1,
2, 3, 4; Vol. XXXIII., Parts 1 and 2; Index to Vols.
XXI. to XXX.

„ Linnean Society.

Proceedings for 1919-20 and 1920-21.

List of Members for 1920-21 and 1921-22.

Manchester—Microscopical Society.

Annual Reports for 1919 and 1920.

Marlborough College—Natural History Society.

Reports, Nos. 68 (1919), 69 (1920), and 70 (1921).

Norwich—Prehistoric Society of East Anglia.

Proceedings, Vol. III., Parts 2 (1919-20) and 3 (1920-21).

Oxford—Ashmolean Natural History Society.

Report for 1920.

Perthshire—Society of Natural Science.

Transactions and Proceedings, Vol. VII., Parts 2 (1919-20)
and 3 (1920-21).

Toronto—Royal Canadian Institute.

Transactions, Vol. XII., Part 2; Vol. XIII., Parts 1 and 2.

Torquay—Natural History Society.

Vol. II., Nos. 5 and 6; Vol. III., No. I (1921).

U.S.A.—Boston—Society of Natural History.

Proceedings, Vol. XXXV., Nos. 4, 5, and 6.

,, California—Academy of Sciences.

Proceedings, Vol. II., Part 2, Nos. 13 to 17; Vol. VIII., Nos. 2,
8, and 9 and Index; Vol. IX., Nos. 1 to 15 and Index;
Vol. X., Nos. 1 to 9.

,, Chicago—Field Museum of Natural History.

Annual Report, Vol. V., Nos. 3, 4, 5, and 6.

Publication No. 207 (Zoological Series), Vol. XIV., No. 1.

,, Cincinnati—Lloyd's Library.

Mycological Notes, Nos. 48 to 60.

Vol. V. Index—Miscellaneous (7 papers).

,, Milwaukee, City of—Public Museum.

Bulletin, Vol. II., No. 2; Annual Report for 1919.

,, Wisconsin—Natural History Society.

Vol. XIII., No. 4 (Dec., 1915).

,, Missouri—Botanical Garden.

Bulletin, Vol. VIII., Nos. 7, 8, and 10; Vol. IX., Nos. 1 to 5,
7, 8, 9; Vol. X., Nos. 1, 2, and 3.

,, Philadelphia—Academy of Natural Sciences.

Proceedings, Vol. LXXI, Parts 2 and 3; Vol. LXXII., Parts 1,
2 and 3; Vol. LXXIII., Part 1.

,, Portland—Society of Natural History.

Vol. III. Part 2 (1919).

U.S.A.—Washington—Geological Survey.

Bulletins, 679, 682, 697, 704, 706, 712-714, 715 (A, K-M), 716 (D-H),
719, 725 (A-I), 726 (B, C, D, F).

Water Supply Papers : 447, 449, 451, 453, 456, 459-462, 464-466,
471, 472, 474-476, 481, 490 (A, B), 500 (A, B).

Professional Papers : 121, 123, 128 (D, E), 129 (A, B).

Mineral Resources : 1915, Part I., No. 9.

„ „ 1916, Part II., Nos. 9, 11, 27, 28.

„ „ 1917, Part I., No. 9 and Index.

„ „ 1918, Part I., Introduction and Nos. 28, 31 ;
Part II., Parts 34-37 and Index.

„ „ 1919, Part I., 6, 9-12, 15-27 ; Part II., 4, 5, 8,
10, 13-34.

„ „ 1920, Part I., Preliminary Survey and Nos.
1-17 ; Part II., 1-23, 25.

Publications (from Smithsonian Report). Nos.
2558, 2561 to 2569, 2599 to 2607.

Washington—Government Printing Works.

Museum Reports for 1918-19, 1919-20 and 1920-21.



List of Members.

Any change in the Address of Members should be at once notified
to the Secretaries by Post Card.

The Dates prefixed to Members' names signify date of Election.
O stands for an Original Member who signed the requisition for the
formation of the Club in 1863.

Hon. Members.

1914. Charlesworth, Professor John K., M.Sc., Ph.D., F.G.S., Queen's
University, Belfast.
O Donaldson, George, 1 Prospect Street.
O Phillips, Wm. H., Lemonfield, Holywood.
1866. Swanston, W., F.G.S., Farm Hill, Dunmurry
1902. Scharff, Robert F., B.Sc., Ph.D., F.L.S., M.R.I.A., F.R.S.A.I.,
Knockrammy, Bray, Co. Wicklow
1922. Vinycomb, John, M.R.I.A., F.R.S.A.I., 59 Thornton Av., Streatham,
London, S.W.
1880. Welch, R. J., M.R.I.A., 40 Lonsdale Street
1867. Wright, Joseph, F.G.S., 10 May Street

Corresponding Member

- O Holden, J. S., M.D., Sudbury, Suffolk.

Life Members

1903. Stelfox, A. W., A.R.I.B.A., M.R.I.A., 14 Clareville Road, Rathgar,
Dublin.
1893. Wilson, Alec G., J.P., M.R.I.A., Croglin, Ballyaughlis

Ordinary Members:

1921. Adams, John, Auburn, Cranmore Park
1907. Adams, Rev. W. A., B.A., The Manse, Antrim.
1915. Aird, Hugh, 10 King Street
1917. Alderdice, R. Sinclair, F.C.I.B., 12a Linenhall Street.
1921. Alexander, Miss M., Summer Hill, Stranmillis
1911. Anderson, Mrs. D'Arcy, Ballyhossett House, Downpatrick
1911. Anderson, Miss Sarah M., 4 Church View, Holywood.
1882. Andrew, J. J., L.D.S., R.C.S. (Eng.) 23 University Square
1892. Andrews, Miss E. 10 Park Crescent, Tonbridge, Kent
1912. Andrews, Miss E. L., Inla, Comber.
1911. Andrews, Miss M. A., 50, Eglantine Avenue.
1912. Andrews, Dr. Marion B., D.P.H., Orsett, Derryvolgie Avenue
1913. Andrews, Michael C., F.R.G.S., F.R.S.G.S., do.
1921. Ardis, R. A., M.I.E.E., 6 Marine Parade, Holywood
1916. Armstrong, Miss Dorothy, Corlea, Somerton Road.
1915. Amrsrong, Edward A., B.A., do.
1921. Ashtorth, Rev. A. O., Marsdene, Cyprus Park, Bloomfield
1921. Aswhworth, Mrs. do.

1916. Baillie, Robert, Elleslie, Ravenhill Park.
 1907. Baillie, W. T., 26 Green Road, Knock
 1915. Beattie, John Carson, Deaf and Dumb Institution, Lisburn Rd
 1921. Beaumont, Ivor, A.R.C.A., M.S.A., F.R.S.A., F.I.B.D., Municipal
 College of Technology
 1905. Beck, Miss, 1, Derryvolgie Avenue.
 1913. Bell, D. M., Carragh Ard Lodge, Newcastle, Co. Down.
 1896. Bell, E. George, Solitude, Lurgan.
 1893. Bell, Robert, 64, Newington Avenue.
 1917. Bell, Miss Janet M., Daisybank, Holywood.
 1921. Bell, Miss Emma, Cressington, Rosetta Park
 1908. Bennett, S. A., B.A., B.Sc., Campbell College, Belmont
 1884. Bigger, F. J. M.R.I.A., F.R.S.A.I., Ardriagh, Antrim Road
 1914. Bird, Miss 18 Connaught Mansions, Prince of Wales Road, Battersea
 Park, London, S. 11
 1916. Black, S. C., 15, College Gardens.
 1921. Black, Miss N. M., Northdene, North Road, Bloomfield
 1898. Blackwood, Miss Sarah, 6 College Green
 1921. Blair, Mrs. J., 14, Cliftonville Avenue.
 1921. Bloom, H. M., The Hermitage, Marino, nr. Holywood
 1921. Bowman, Miss A., 1, Rossmore Avenue.
 1893. Boyd, Miss E. S., 5 Brock Terrace, The Grange, Guernsey.
 1894. Royd, W. C., J.P., Thornhill, Farnham Road, Bangor
 1917. Bradley, Mrs., Haypark House, Knock.
 1916. Bradley, Miss L. L., Haypark House, Knock.
 1921. Brand, W. J., 18 Ashley Gardens
 1883. Brandon, Hugh B., J.P., 2, Wellington Place.
 1863. Brett, Sir Charles H., Grettton Villa South, Belfast
 1921. Brierley, J. C. A., M.Sc., 224 Cliftonville Road
 1921. Brown, Archibald, Scottish Amicable Life Assurance Society, 13 Done-
 gall Square West
 1883. Brown, Thomas, J.P., 102, Donegall Street.
 1876. Bulla, Charles, 272, Lisburn Road.
 1921. Burden, S. H., 8 Alfred Street
 1899. Burrowes, W. B., F.R.S.A.I., Ballynafeigh House, Belfast.
 1911. Brown, J. B. M., 356 Ormeau Road
 1920. Broughton, E., 58 Hopefield Avenue

 1921. Camac, Dr. J., Purdysburn Fever Hospital
 1903. Campbell, D. C., J.P., M.B.O.U., Templemore Park, London-
 derry.
 1909. Campbell, John, Albert Brickworks, Carrickfergus.
 1917. Campbell, James, Jennymount Mill, Belfast.
 1921. Campbell, A. Albert, F.R.S.A.I., Drumaferrie, Rosetta Park
 1921. Campbell, Mrs. A. Albert, Drumaferrie, Rosetta Park
 1921. Campbell, Mrs., 20 Wellington Park Avenue
 1914. Carter, Charles S., 25 Donegall Street
 1891. Capper, J. Malcolm, 14, Linenhall Street.
 1904. Carmody, Rev. Canon W. P., M.A., Lisburn
 1892. Carrothers, Nathaniel, 145, Stranmillis Road.
 1892. Carson, J. C., 8, Wellington Place.
 1907. Chambers, W., 35, Cranmore Avenue.
 1920. Chandler, W. P., 35 Rugby Road
 1920. Chandler, Mrs., 35 Rugby Road
 1921. Chase, Capt. C. D., M.A., Campbell College, Belmont
 1921. Chase, Miss Kathleen, 8 Chilworth Buildings, Stranmillis Road
 1921. Chase, Miss Ethel, 8 Chilworth Buildings, Stranmillis Road
 1921. Cheyne, S. Donald, J.P., 11 Donegall Place
 1901. Cheyne, H. H., Roseneath, Bangor.
 1920. Churchill, Miss, Inverary, Strandtown.

1894. Cleland, Alex. M.I., 28 Green Road, Knock.
 1894. Cleland, Mrs. Annie, 28 Green Road, Knock.
 1890. Cleland, James A., Brooklyn, Holywood
 1917. Close, R. M., M.R.I.A., 13 Donegall Square North.
 1921. Coey, Henry, Midland Railway Co. (N.C.C.), Terminus, York Road
 1921. Cousins, D., 4 Frederick Terrace, Malone Road
 1914. Corrigan, Chas., 1 Dunedin Terrace, Antrim Road
 1906. Cowie, James, Midland Railway Co. (N.C.C.), Belfast
 1921. Crawford, W. M., B.A., I.C.S., F.E.S., Orissa, Malborough Park
 1921. Crawford, Lieut.-Col. F. H., C.B.E., Cloreen, University Road
 1921. Crymble, Mrs. S., 18 College Green
 1913. Cunningham, Miss M. E., F.R.S.A.I., Glencairn, Belfast.
 1884. Cunningham, Rt. Hon. Samuel, Fernhill, Belfsst
 1915. Cunningham, Josias, R.N.V.R., M.B.O.U., Fernhill, Belfast.
 1921. Curry, Wm., 5 Oakland Avenue, Bloomfield
 1921. Cuthbert, Rev. A., M.A., Rocklands Manse, Carrickfergus
1921. Davison, A. H., F.A.I., Estate Agent, 32 Wellington Place
 1916. Davis, Miss E. C., Lauraville, Balmoral.
 1921. Deane, Arthur, M.R.I.A., Art Gallery and Museum, Belfast
 1919. Deans, T. M., B.A., LL.D., Academy House, Rosetta.
 1891. D'Evelyn, A. M., M.D., Ballymena.
 1915. Dick, Miss Mary E., M.A., 8 Wellington Park
 1921. Dickson, S. E., 9 Donegall Square West
 1921. Dinsmore, J. A. S., 28 and 30 Castle Place
 1921. Dobbin, W. C., Eastnor, Somerton Road
 1921. Dobbin, Mrs. W. C., Eastnor, Somerton Road
 1921. Doggart, Henry, 24 Canterbury Street
 1921. Donaldson, Dixon, Dunoon, Islandmagee, Co. Antrim.
 1908. Duncan, W., 54 Textile Buildings, Donegall Square South
 1921. Dunwoody, W. J., 19 Marine Parade, Holywood
 1909. Derryhouse, Major A. R., D.Sc., F.G.S., M.R.I.A., University
 College, Reading
1921. Earls, Professor J., B.A., 31 Ravenhill Park
 1921. Earls, Miss Annie, do.
 1916. Edwards, Herbert, 54 Ulsterville Avenue
 1916. Edwards, Mrs., 54 Ulsterville Avenue
 1884. Elliott, David, B.A., J.P., Ardree, Bloomfield
1868. Faren, W., F.R.S.A.I., 11 Mountcharles
 1921. Farrell, George, 1 Mount View, Lower Windsor Avenue
 1912. Ferguson, Mrs., St. Helen's, Holland Park, Knock
 1913. Ferguson, Samuel, St. Helen's, Holland Park, Knock
 1918. Fyldes, H., 20 Wilmont Terrace, Lisburn Road
 1921. Finlay, W. J., Haslar, Galwally, Belfast
 1897. Finlay, Miss, A. M. 3 Old Nichol Street, Bethnal Green, London, E.S.
 1906. Finlay, Arch. H., Willesden, Holywood
 1921. Fleet, Capt., H. G., Municipal College of Technology
 1899. Foster, Nevin H., F.L.S., M.R.I.A., M.B.O.U., Hillsborough
 1903. Foster, Mrs. N. H., Hillsborough
 1911. Foster, Miss A. B., B.Sc., Y.W.C.A., William Street, Waterford
 1921. Freeland, Samuel, 23 Meadowbank Street
 1892. Fulton, David, Arlington, Windsor Avenue
 1921. Fulton, Wm. 44 Wellington Place
1904. Gaffikin, William, J.P., Notting Hill
 1891. Galloway, Joseph, 59 Eglantine Avenue
 1892. Gamble, Miss, Lorne, Craigavad

1913. Gardner, Miss Nettie H., B.Sc., Hawthornden Road, Knock
 1893. Gibson, Andrew, F.R.S.A.I., Fairfields, Lansdowne Road
 1917. Gibson, Mrs., Bonnington, Lansdowne Road
 1911. Gibson, Mrs. Joseph, Hollow Bridge House, Hillsborough, Co. Down
 1921. Gibson, Wm. J., Montpelier House, Malone Road
 1921. Gibson, R. H., M.R.I.A., 5 West Elmwood
 1921. Gibson, Samuel, J.P., Summer Hill, Dunmurry
 1921. Gilliland, J. H., 33 Gresham Street
 1921. Gilliland, W. T., B.Sc., 7 Wellington Place
 1921. Glendinning, R. G., Jun., Cloughmore, Myrtlefield Park
 1905. Glover, James, The Glebe, Kirkcubbin, Co. Down
 1918. Gordon, Eustace, 35 Rosemary Street
 1921. Gore, W., Municipal College of Technology
 1921. Graham, Thomas, 26 Alexandra Avenue
 1891. Green, Mrs. Isaac, Hawthornden, Knock
 1895. Green, W. A., F.R.S.A.I., 4 Salisbury Terrace, Chichester Park.
 1921. Green, H. P., Limehurst, Holland Park, Knock
 1920. Greenham, Miss J. C., 44 Orient Gardens
 1901. Greeves, J. Theodore, Nendrum, Knockdene Park.
 1901. Greeves, W. Leopold, Ormeau Avenue
 1901. Greeves, Fergus M., Garranard, Sydenham
 1918. Greeves, O. V., Tavanagh House, Portadown
-
1908. Hadden, Mrs., Magharee, Portadown
 1920. Hale, W. Bancroft, 6 Salisbury Gardens
 1921. Hall, Henry, 177 Saugville Street
 1883. Hamilton, Rt. Hon. and Rev. T., D.D., LL.D., Queen's University
 1908. Hamilton, Miss, 5 Church Avenue, Holywood
 1921. Hamilton, Wm., 32 Silvio Street
 1920. Harbison, Wm., Highbury, North Road.
 1916. Harper, V. M. B.A., Campbell College, Belmont
 1920. Haslett, W., Model School, Belfast
 1921. Haslett, F. W., 1 Ulster Terrace, Lisburn Road
 1921. Hayward, H. Richard, Hopefield House, Antrim Road
 1921. Heenan, Miss J., 11a Stranmillis Road
 1908. Henry, F. W., Ye Olde Castle, Castle Place
 1915. Herdman, Miss E. W., Fountainville, University Road
 1876. Heron, F. Adens, D.L., J.P., F.R.S.A.I., Maryfield, Holywood
 1921. Hawton, J., M.P.S.I., 315 Ormeau Road
 1921. Higginson, Thomas Sherlock, 20 Waring Street
 1921. Higginson, R. Ernest, 20 Waring Street
 1905. Hobson, Mrs., Aitennach, Crawfordsburn, Co. Down
 1921. Hoffman, F., Leamington, 7 Old Cavehill Road
 1895. Hogg, A. R., 10 Thorndale Avenue
 1908. Hogg, D. J., 16 Kansas Avenue
 1903. Holland, Miss, Highbury, Cadogan Park
 1904. Holland, Frank, Fairhill, Osborne Gardens
 1921. Holness, John J., 26 Ava Street
 1906. Hopkirk, F. G., Midland Railway Co. (N.C.C.) Belfast
 1919. Horsbrugh, C. B., Blessington House, Hillsborough, Co. Down
 1921. Hoskins, Miss M., 14 Rosetta Park
 1921. Hoskins, A. P., F.I.C., F.C.S., 14 Rosetta Park
 1911. Houston, Miss, Lisheen, Sans Souci Park
 1914. Houston, James Dick, Northern Bank, Elphin, Roscommon
 1921. Houston, H. S., Slievemara, Jordunstown, Co. Antrim
-
1921. Ireland, J. Herbert, 107 South Parade

1892. Jaffé, Lady Kinedar., Strandtown
 1909. Jenkins, W. A., 6 Elmwood Terrace
 914. Jenkinson, Henry, 29 Rosemary Street
 11901. Johnson, Rev. W. F., M.A., F.E.S., M.R.I.A., 4 Killowen Terrace, Rostrevor
 1906. Johnston, F. W., The Cottage, Cultra
 1916. Johnston, Miss M. B., Beechville, Glenburn Park
 1921. Johnston, E. C., F.R.S.A.I., Glenmount, Newtownards
 1911. Jones, W. Bradwen, 3 Salisbury Villas, Chichester Park
 1921. Jones, H. H., Solicitor, 21 Mayfair, Arthur Square
1916. Kay, Miss M. P., B.Sc., Burnside, Bangor
 1917. Keiller, W., 11 Chichester Street
 1918. Kennedy, David, Pembroke, Wandsworth Road, Knock
 1921. Kennedy, Captain E. R., A.R.I.B.A., The Bungalow, Sandown Road Knock
 1921. Kennedy, R. N., J.P., Avonmore Lodge, Balmoral
 1920. Kenny, Mrs. E. E., 41 Claremount Street
 1921. Kernohan, J. W., M.A., Seaforde, Park Road
 1921. Kidd, James, 44 Brookvale Avenue
 1899. Killen, William, 3a Dudley Chambers, 29 Waring Street
 1886. Kirkpatrick, F., 27 Oxford Street
 1868. Knowles, W. J., M.R.I.A., F.R.S.A.I., Flixton Place South, Ballymena
 1877. Kyle, R. A., 17 Wellington Park
1921. Lane, F. W., 79 Portallo Street
 1901. Larmor, H. G., J.P., Lisburn.
 1920. Lavery, W. H., Glenwood, Bloomfield Road
 1921. Lawther, Miss J., 11 Park Grove, Hull
 1912. Ledgerwood, N. J., J.P., 10, Wellington Park.
 1921. Lees, Miss S. L., Drumadon, Castle Park
 1920. Lepper, R. S., M.A., L.L.M., F.R.S.A.I., Eslinore, Crawfordsburn
 1899. Lindsay, Professor J. A., M.D., M.A., F.R.C.P., 3 Queen's Elms
 1918. Lindsay, Eric, c/o. Ulster Bank, Cromac Street
 1915. Lindsay, Mrs., c/o. Ulster Bank, Cromac Street
 1921. Lindsay, A. G., Northern Bank House, Holywood
 1921. Louden, J. B., 28 Salisbury Avenue, Antrim Road
 1921. Loughridge, James, 173 Cliftonville Road
 1918. Lowry, Miss, Hazelwood, Bloomfield
 1918. Lewis, Mrs. A. J., 2 Ranfurly Drive, Bloomfield
 1893. Lowry, D. E., c/o. P. K. Arm, Ltd., Clarence Street West
 1908. Lowry, James, Llewellyn Avenue, Lisburn.
 1910. Lowry, Miss L., Hazelwood, Bloomfield.
 1917. Lytle, James, 1, Olney Terrace, Ballygomartin Road.
1921. Mackenzie, W. G., A.R.H.A., The Studio, Clarence Place
 1921. Mackey, Miss A. E., Cuil-na-Mban, Norfolk Drive, Glen Road
 1915. Maconachie, Rev. D. H., B.A., B.D., The Manse, Holywood.
 1915. Maconachie, Mrs., The Manse, Holywood
 1905. Macoun, Mrs. S. M., Clanrolla, Windsor Park
 1912. Macoun, S. M., Clanrolla, Windsor Park
 1920. Magowan, A., 2, Easton Crescent.
 1921. Magowan, Mrs., 2 Easton Crescent
 1876. Major, Rev. J. J., Doagh, Co. Antrim
 1905. Malcolm, Miss Susan, Downshire Road, Holywood.
 1921. Malcolm, Bowman, M.I.C.E., M.I.M.E., Inver, Ashley Park
 1899. Malcolmson, J. G. B., Cairnbourn, Strandtown.
 1901. Malcolmson, Herbert T., M.B.O.U., 32, Arthur Street.
 1901. Malcolmson, Joseph, 32, Arthur Street.
 1914. Manning, J. W., Slieve Donard Hotel, Newcastle.

1921. Manning, W., 16 Shaftesbury Square
 1880. Marsh, Mrs., Glenlyon, Hollywood.
 1891. Marshall, H. C., Bryansburn Road, Bangor.
 1916. Masterson, Miss, 93 Wellesley Avenue.
 1915. Mawdsley, Miss, 28 Green Road, Knock
 1908. Maxwell, Henry, Dunalbine, Deramore Park.
 1892. Maxton, Jas., M.I.N.A., 6 Kirkliston Drive, Bloomfield.
 1919. Mayes, A. S., 23, Glandore Avenue.
 1903. Mayne, H. Horner, 24, Elmwood Avenue.
 1921. Meakin, Chos., 119 The Mount
 1917. Megaw, Rev. W. R., B.A., The Manse, Rosetta
 1920. Megaw, I. J., 26 Linenhall Street
 1921. Mercier, Alderman S. T., J.P., 89 Cliftonville Road
 1918. Metcalfe, A. W. Hawthornden Road, Knock.
 1906. Millar, Thomas O., 306, Antrim Road.
 1907. Millar, Miss Bessie, 22 Ravenhill Gardens
 1921. Milligan, Dr. C. J., Dispensary House, Ligoniel
 1911. Montgomery, Thos. Ward, 40 Rosemary Street
 1898. Montgomery, H. C., F.R.S.A.I., 40 Rosemary Street
 1913. Montgomery, Miss E. S., 26, College Green.
 1920. Montgomery, Miss S., 120, Eglantine Avenue.
 1920. Montgomery, Miss G., 120, Eglantine Avenue.
 1911. Montgomery, Miss Jane E., 8, Sandhurst Road.
 1916. Moore, Frank, J. P., F.E.I.S., Home-Lyn, Marlborough Park North
 1917. Morrison, Rev. Robert, B.A., The Curateage, Hillsborough.
 1921. Morrison, Miss L., Southleigh, Knockbreda Park
 1921. Muldowney, J., A.M.I.E.E., Rathverde, Cherryvalley Park
- .
1915. MacCarthy, Mrs., Freshford, Knock.
 1905. MacCleary, A., Kensington Hotel, College Square East.
 1901. MacRae, Kenneth, Ulster Agricultural Society, Balmoral
 1899. M'Bretney, W. A. J., 31, Haypark Avenue.
 1909. M'Cance, James, 302, Antrim Road.
 1913. M'Cance, Captain Stoupe, 4 Markham Square, London, S.W. 3
 1921. M'Bride, J., 1 Adelaide Street
 1921. M'Callum, Major J. D. M., C.B.E., D.S.O., B.A., 6 Windsor Avenue
 1921. M'Carthy, W. J., Ashley, Alexandra Park, Hollywood
 1919. M'Caw, James, Glenfield, Donegall Park
 1884. M'Cleery, H. J.P., Oakhill, Dunmurry
 1912. M'Clelland, E. W., B.Sc., 79, Kansas Avenue.
 1921. M'Comish, John, Benmore, Strandtown
 1903. M'Connell, Miss, Stranmillis House.
 1879. M'Connell, James, J.P., Stranmillis House.
 1921. M'Cullagh, Miss J. J., 8 Cardigan Drive
 1921. M'Cullagh, Miss S., 8 Cardigan Drive
 1917. M'Deviitt, H., 115 High Street, Hollywood
 1913. M'Dowd, Miss, 36 North Parade
 1918. M'Dowell, R., 86 University Street
 1921. M'Gilley, F., 8 Wellington Place
 1921. M'Glavery, R., The Brickworks, Springfield Road
 1917. M'Ilroy, R. J., 32 Pandora Street
 1921. M'Ilwaine, J. E., M.D., 26 College Gardens
 1914. M'Kay, Miss E. W., B.Sc., Ardbana Terrace, Coleraine.
 1904. M'Kean, E. John, B.A., B.L., Heathfield, Old Cavehill Road.
 1920. M'Kee, Miss F. V., Ashley, Charnwood Avenue.
 1920. M'Kee, Miss Eva K., Ashleigh, Charnwood Avenue
 1921. M'Kee, Joseph, 60 Clonlee Drive, Strandtown
 1906. M'Kinney, Miss, Sentry Hill, Carnmoney.
 1921. M'Laine, Lechlan, Rathaline, Annadale Avenue
 1921. M'Laine, R., 42 College Park Avenue

1912. M'Meekin, Miss A. M., Sunnyside, Carnmoney, Co. Antrim
 1917. M'Meekin, A., J.P., Cogry House, Doagh
 O M'Millan, W., J.P., 30, Ashley Avenue.
 1920. M'Neill, Mrs., Lackabeg, Knockdene Park
1921. Neill, F. F., 35 Candahar Street
 1921. Niblock, J. B., 208 Cliftonville Road
 1921. Niblock, Mrs., 208 Cliftonville Road
1898. Orr, James, 17, Garfield Street.
 1921. Osborne, T. Edens, F.R.S.A.I., 4 College Square, North.
 1921. Osborne, Miss M. B., 11 Marine Parade, Hollywood
1921. Paton, John, Ardmore, Bangor
 1888. Patterson, Robert, F.L.S., M.R.I.A., M.B.O.U., Glenbank, Holywood.
 1921. Patterson, W. H. F., Auburn, Donaghadee
 1921. Parkes, W. J., "Wannsee," Barnett's Road, Knock
 1921. Parkes, Mrs., "Wannsee," Barnett's Road, Knock
 1921. Parkes, Miss Lilian, "Wannsee," Barnett's Road, Knock
 1921. Parsons, Thomas, Farm Hill, Marino
 1867. Pim, John, J.P., Bonaven, Antrim Road.
 1869. Pim, Joshua, Rathbawn, 12 Adelaide Park
 1903. Pim, W. R., Lisnagarvey, Lisburn.
 1903. Pooler, Rev. Chas. K., D.D., M.R.I.A., D.Litt., Carnbin, Whitehouse
 1890. Porter, F. A., 13 Queen's Square
 1890. Porter, W., Beechview, Balmoral Avenue
 1921. Porter, Miss May, do.
 1921. Porter, Miss Edith, do.
 1883. Praeger, R. Ll. B.A., B.E., M.R.I.A., Nat. Library, Kildare St., Dublin
 1921. Pyper, James, B.A., 30 Cranmore Avenue
1901. Rankin, Will, 26 Derryvolgie Avenue
 1904. Rankin, Mrs., 26 Derryvolgie Avenue
 1907. Rea, Miss M. W., Salem House, Sydenham
 1916. Rea, Miss L. C., Salem House, Sydenham
 1921. Reid, John, 5 Eglantine Gardens
 1921. Reid, Mrs., 29 Rosetta Avenue
 1921. Reid, Jas., B.Sc., Hollywood
 1919. Reilly, Geo. C., Greenholme, Carrickfergus
 1921. Reynolds, Miss Doris L., Queen's University
 1907. Riddel, Mrs., Grosvenor, Glastonbury Avenue
 1921. Riddell, Alexander, 12 Lower Crescent
 1903. Robb, H. M., 44 Ulsterville Avenue.
 1921. Roberts, J. R., 43 Fitzwilliam Street
 1921. Robinson, W. R., 58 Ravenhill Park
 1921. Robinson, Miss L., 16 Kingsmere Avenue
 1921. Robson, Mrs., 81, Wellington Park.
 1921. Rossington, Rev. H. J., M.A., B.D., Ardeevin, Cadogan Park
 1921. Rumley, J. D., Winston, Marlborough Park North
 1909. Russell, Nelson, Strathmore, Lisburn.
1899. Sandes, Robert, Chorlton, Adelaide Park
 1913. Savage, W. E. J., 8 Lincoln Avenue.
 1917. Sayers, Miss W., B.A., Bartragh, Knock
 1920. Sayers, Miss J. B., Bartragh, Knock.
 1918. Seymour, J., Inchmarlo, Marlborough Park
 1921. Shanks, Edward, 13 Donegall Square, West

1921. Shaw, Miss Louie Hinton, 72 Cromwell Road
 1911. Shaw, G. W., Ulster Bank, York Street
 1905. Shiels, Rev. J. F., P.P., Saintfield
 1921. Shiels, Edward, Summer Hill, Bangor
 1921. Shortt, James, Wilmont, Lisburn
 1921. Sinclair, Robert, 48 Waring Street
 1890. Skillen, Joseph, Largymore, Lisburn.
 1920. Small, Professor J., D.Sc., Queen's University
 1921. Smith, W. S., 7 Adelaide Park
 1921. Spencer-Smith, C. F., Friends' School, Lisburn
 1921. Squire, Miss E. Lousie, Roselands, Lansdowne Road
 1921. Stanley, Major Rupert, B.A., M.I.E.E., F.I.R.E., Municipal College
 of Technology, Belfast
 1921. Steed, George G., 13 Donegall Square West
 1921. Steel, David L., 141 Cavehill Road
 1893. Steele, Miss, Dooneen, Marlborough Park.
 1921. Steen, Rev. David, B.A., The Manse, Islandmagee
 1910. Stelfox, Mrs. A. W., B.Sc., A.R.C.Sc.L., 14 Clareville Road, Rathgar,
 Dublin
 1911. Stendall, J. A. S., The Museum, College Square North
 1904. Stephens, Captain J. Kyle, J.P., 13 Donegall Square North
 1921. Stevenson, Miss E., Inverarnan, Cyprus Park, Bloomfield
 1921. Stewart, A. W., "Belfast Telegraph," Belfast
 1894. Stewart, W. J., 11 Elgin Street
 1919. Strain, W., Windsor Park

 1921. Tate, Jas., M.P.S.L., 7 and 9 Royal Avenue
 1920. Tedley, Miss, Rosetta School, Belfast
 1921. Thomas, J. Leigh, J.P., Downshire Road, Bangor
 1921. Thomas, Mrs. J. Leigh, Downshire Road, Bangor
 1921. Thompson, S. B., J.P., Piney Ridge, Malone Road
 1921. Thompson, Joseph, Altorf, Hollywood Road
 1921. Thompson, Wm., Lauriston, Derryvolgie Avenue
 1921. Thomson, Richard, Cable Road, Whitehead
 1921. Todd, R. G., 1 Mount Easton, Cliftonville
 1875. Traill, W. A., M.A., F.R.S.A.I., Ing, Bushmills, Co. Antrim
 1921. Trumble, Dr. Andrew, M.B., D.P.H., J.P., Tyr-owen, Downview Av.
 1921. Turner, S., jun., 142 Cliftonpark Avenue
 1904. Turtle, W. Haydock, Lumeah, Malone Road.
 1909. Turtle, Mrs. N. S., Rosemount, Knock

 1893. Walker, W. J. D., C.B., The Sycamores, Drogheda.
 1917. Walker, Franklin M., Mount Royal, Whitehead.
 1920. Walker, Mrs., Mount Royal, Whitehead
 1920. Ward, Miss Alice, Albert Villa, Sydenham.
 1921. Ward, Francis E., Ridgeway Street, Stranmillis Road
 1921. Ward, George, 21 Cranmore Avenue
 1919. Warnock, Miss, 24 Cromwell Road
 1921. Watkins, Rev. M., 4 Bathgate Drive, Strandtown
 1921. Watts, Mrs., Tiverton, Upper Newtownards Road
 1909. Watson, John G., The Maples, King's Road, Knock
 1921. Watson, Frank, The Hamlets, Strandtown
 1921. Watt, Miss Anna, 622, Ravenhill Road.
 1920. Weston, Wilfred W., 14 Donegall Square West
 1921. White, Chas. E., 219 Cavehill Road
 1921. White, George Chatsworth, Balmoral
 1877. Whitla, Sir William, M.D., J.P., M.P., Lennoxvale House, Belfast
 1917. Williamson, James, J.P., Sandown Park, Knock
 1893. Wilson, George, 17 Bedford Street

1901. Wilson, Prof. Gregg, M.A., D.Sc., O.B.E., M.R.I.A., Ardenza,
King's road
1904. Wilson, Mrs., Ardenza, King's Road,
O Workman, Rev. R., M.A., Crusheen, Cadogan Park
1901. Workman, W. H., F.Z.S., M.B.O.U., Lismore, Windsor Avenue

Junior Members.

1921. Bulla, Alan C., Rydal, Lisburn Road
1921. Blake, F. R. D., 4 Knock Road
1921. Gibson, C. Ward, Silverton, Earlswood Road
1920. Crawford, Maurice Orissa, Marlborough Park
1920. Crawford, Ronald, do.
1922. Crawford, Jack, do.
1921. Mulligan, Miss J., Rosetta N.S.
1918. M'Carthy, Miss Daisy, 4, Ardlee Terrace, Hollywood
1918. M'Carthy, Desmond, 4, Ardlee Terrace, Hollywood.
1918. Quick, Geoffrey G., 17, Rossmore Avenue.
1918. Quick, Kenneth J., 17, Rossmore Avenue.
1921. Ren, John H., 17 Queen's Parade, Bangor
1921. Walshe, Joseph, 50 South Parade, Ormeau Road
1921. Walshe, W. W., do.



BELFAST NATURALISTS' FIELD CLUB.

SIXTIETH YEAR, 1922-23.

GENERAL COMMITTEE.

President :

REV. W. R. MEGAW, B.A.

Vice-President :

J. A. S. STENDALL, M.B.O.U.

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R. BELL, F.M.N.S.

Hon. Sec. Zoological Section :

W. A. GREEN, F.R.S.A.I.

Hon. Sec. Archæological Section :

A. ALBERT CAMPBELL, F.R.S.A.I.

Hon. Sec. Junior Section :

J. R. H. GREEVES.

Ordinary Members of Committee :

Retire 1923.

N. Carrothers.

T. W. Deans, LL.D.

D. Elliott, B.A.

Retire 1924.

S. M. Macoun.

Miss S. Blackwood.

Prof. J. K. Charlesworth,
D.Sc., M.R.I.A.

Retire 1925.

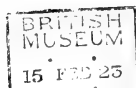
F. Adens Heron, D.L., J.P.

A. Percy Hoskins, F.I.C.,
F.C.S.

Wm. Porter.

Hon. Secretary :

A. M'L. CLELAND, GREEN ROAD, KNOCK, BELFAST.



Reduced Prices of Proceedings.

In accordance with resolution passed at General Meeting held on 28th April, 1911, the following reductions have been made in the prices of Proceedings, &c., to Members of the Club. When the stock has been sufficiently reduced prices will be raised again.

Proceedings, without Appendices, Series II., Vol. I. (1873-74 to 1879-80) to 2/6 per vol.				
"	"	"	"	" II. (1881-82 to 1886-87) to 2/6 "
"	"	"	"	" III. (1887-88 to 1892-93) to 2/6 "
"	"	"	"	" IV. (1893-94 to 1900-01) to 2/6 "
"	"	"	"	" V. (1901-02 to 1906-07) to 2/6 "

The prices quoted above are for complete volumes, but any separate part may be had for 6d.

Appendices, Vol. I.	...	In Leather Binding	...	to 5/- per vol.
" " I.	...	In Paper Binding	...	to 3/6 "

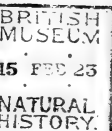
Separate Appendices, which in covers are priced 6d and 1s, may be had in loose sheets at 1d and 2d per copy respectively. (This does not apply to Nos. 4 and 7 and 8 of Vol. II., of which we have no surplus.)

Flora of North-East Ireland. by Stewart and Corry, with Supplement. 2/6 per vol.

The following Publications of the Club can be had from the Librarian.

Eighth Annual Report—1870-71, containing Appendix II., List of Irish Liassic Foraminifera—Wright; and List of the Fossils of the Estuarine Clays of Antrim and Down—Stewart	2/6
Ninth Annual Report—1871-72	1/-
Tenth do. 1872-73	1/-
Proceedings, Series II., Vol. I., Part I., 1873-74, containing Appendix III., List of Mosses of North-East of Ireland—Stewart; and List of Cretaceous Microzoa of North of Ireland—Wright, 2 Plates	2/6
„ Series II., Vol. I., Part II., 1874-75	1/-
„ „ „ III., 1875-76	1/-
„ „ „ IV., 1876-77, containing Appendix IV., Recent Foraminifera of Down and Antrim—Wright, 1 Plate; and Silurian Rocks of Co. Down—Swanston and Lapworth, 3 Plates	2/6
„ Series II., Vol. I. Parts V. and VI., 1877-78 and 78-79 (in one)	1/-
„ „ „ Part VII., 1879-80., containing Appendix V., List of Post-Tertiary Foraminifera of North-East Ireland—Wright; and List of Mollusca of Boulder Clay of North-East of Ireland—Stewart	2/-
„ Series II., Vol. II., Part I., 1880-81, containing Appendix VI., List of Foraminifera of South Donegal—Wright; Sponge Remains from Carb. Limestone, County Sligo—Wright; and Fossil Sponge-spicules, County Sligo—Carter, 1 Plate	1/6
„ Series II., Vol. II., Part II., 1881-82	1/-
„ „ „ III., 1882-83, containing Appendix VII., Supplemental List of Mosses of the North-East of Ireland—Stewart	1/-
„ Series II., Vol. II., Part IV., 1883-84, containing Appendix VIII., Notes on Irish Coleoptera—Halliday; Cromlechs of Antrim and Down—Gray, 12 Plates; and Prehistoric Monument near Sligo—Elcock, 4 Plates	3/-
„ Series II., Vol. II., Part V., 1884-85, containing Appendix IX., Ostracoda of Belfast Lough—Malcolmson; Fungi of North of Ireland—Lett; Foraminifera of “Protector” Cruise, &c.—Wright; Cretaceous Foraminifera of Kendy Hill—Wright; Irish Coleoptera—Patterson	3/-
„ Series II., Vol. II., Part VI., 1885-86, containing Appendix X., The Ferns of Ulster—Phillips and Praeger	2/-
„ Series II., Vol. II., Part VII., 1886-87., containing Appendix XI., Notes on the Sections exposed at the Alexandra Dock, Belfast, with List of Fossils, 1 Plate—Praeger	2/-
„ Series II., Vol. III., Part I., 1887-88, containing Appendix XII., Marine Shells of the North of Ireland—Praeger	2/6
„ Series II., Vol. III., Part II., 1888-89	1/-
„ „ „ III., 1889-90, containing Report of Larne Gravels Committee, 2 Plates...	2/-
„ Series II., Vol. III., Part IV., 1890-91	1/-
„ „ „ V., 1891-92	1/-
„ „ „ VI., 1892-93	2/-
„ Index	6d
„ Series II., Vol. IV., Part I., 1893-94, containing Appendix XIII.	2/-
„ „ „ II., 1894-95, „ „ XIV.	2/-
„ „ „ III., 1895-96 „ „ XV.	2/-
„ „ „ IV., 1896-97	1/-
„ „ „ V., 1897-98	1/-
„ „ „ VI., 1898-99	2/-
„ „ „ VII., 1899-1900, 1900-01 (in one)	2/-
„ „ „ Vol. V., Parts I. and II., 1901-02, 1902-03 (in one)	2/-
„ „ „ Part III., 1903-04	1/-
„ „ „ IV., 1904-05	1/-
„ „ „ V., 1905-06, with Appendices XVI. and XVII.	2/-
„ „ „ VI., 1906-07, with Index	1/6
„ „ „ Vol. VI., Part I., 1907-08,	1/6
„ „ „ II., 1908-09	1/6
„ „ „ III., 1909-10	1/6
„ „ „ IV., 1910-11, with Appendices I. & II. of Vol. III.	2/-
„ „ „ V., 1911-12	1/-
„ „ „ VI., 1912-13, with Title Page & Index to Vol. VI.	2/-
„ „ „ Vol. VII., Part I., 1913-14, with Report of 50th Anniversary	2/-
„ „ „ II., 1914-15	1/6
„ „ „ III., 1915-16	1/6
„ „ „ IV., 1916-17	1/6
„ „ „ V., 1917-18, with Title Page and Index to Vol. VII., and Appendix III. of Vol. III.	2/-
„ „ „ Vol. VIII., Part I., 1918-19	3/-
„ „ „ II., 1919-20	2/-
„ „ „ III., 1920-21	2/-
„ „ „ IV., 1921-22	2/-

Some of the above are now available to Members at reduced prices.



ANNUAL REPORT

... AND ..

PROCEEDINGS.



SERIES II.

VOL. VIII.



PART V.

1922-23

PRINTED FOR MEMBERS ONLY.
PRICE OF EXTRA COPIES TO MEMBERS, 2/-.

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PROCEEDINGS
AND ANNUAL REPORT
OF THE
BELFAST NATURALISTS
FIELD CLUB,

FOR THE YEAR ENDING 31ST MARCH, 1923.

(SIXTIETH YEAR.)

SERIES II.
VOLUME VIII



PART V.
1922-23.

Belfast;

PRINTED AT "THE NORTHERN WHIG" OFFICES, BRIDGE STREET.

1923.

EDITORS:

S. A. BENNETT, B.A., (Cantab), B.Sc. (Lond.)

A. ALBERT CAMPBELL, F.R.S.A.I.



Advisory Editorial Committee:

Botany—NATHANIEL CARROTHERS.

Geology—ROBERT BELL.

Zoology—JAMES ORR.

Archæology—W. A. GREEN, F.R.S.A.I.

Belfast Naturalists' Field Club.

SIXTIETH YEAR, 1922-1923

GENERAL COMMITTEE.

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Vice-President:

J. A. SIDNEY STENDALL, M.B.O.U.

Hon. Treasurer:

T. EDENS OSBORNE, F.R.S.A.I., 4 COLLEGE SQUARE N., BELFAST.

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S. A. BENNETT, B.A., B.SC.

Hon. Sec. Geological Section:

ROBERT BELL.

Hon. Sec. Zoological Section:

W. A. GREEN, F.R.S.A.I.

Hon. Sec. Archaeological Section:

A. ALBERT CAMPBELL, F.R.S.A.I.

Hon. Sec. Junior Section:

J. R. H. GREEVES, B.SC.

Ordinary Members of Committee.

Retire 1923.

N. Carrothers.
T. M. Deans, LL.D.
D. Elliott, B.A.

Retire 1924.

S. M. Macoun.
Miss S. Blackwood.
Prof. J. K. Charlesworth,
D.SC., M.R.I.A.

Retire 1925.

F. Adens Heron, J.P., D.L.
A. Percy Hoskins, F.I.C.,
F.C.S.
Wm. Porter (died during
year).
R. J. Welch, M.R.I.A.,
(co-opted)

Hon. Secretary:

A. M'I. CLELAND, GREEN ROAD, KNOCK, BELFAST.



Annual Report.

YOUR COMMITTEE has pleasure in submitting the Sixtieth Annual Report, as follows:—

During the year 85 Ordinary Members and 26 Junior Members have been elected; 20 have resigned and 9 have died. The total membership on 31st March, 1923, is 571, a gratifying increase during the year of 117 Members. The composition of the membership is now:—7 Honorary, 1 Corresponding, 2 Life, 520 Ordinary, and 41 Junior.

Your Committee greatly regret the decease during the year of the following members:—2 Honorary and 7 Ordinary. A list of their names will be found at the end of the Report.

Twelve Committee meetings have been held during the year, at which the attendances were as follows:—

Rev. W. R. Megaw	... 6	N. Carrothers	... 11
J. A. S. Stendall	... 10	Dr. T. M. Deans	... 8
T. Edens Osborne	... 12	D. Elliott	... 8
W. M. Crawford	... 8	S. M. Macoun	... 6
R. Bell	... 9	Miss S. Blackwood	... 12
S. A. Bennett	... 7	Prof. J. K. Charlesworth	4
W. A. Green	... 5	F. A. Heron	... 3
A. A. Campbell	... 11	A. P. Hoskins	... 6
J. R. H. Greeves	... 2	W. Porter	... —
R. J. Welch	... 8	A. M'I. Cleland	... 12

On the death of Mr. W. Porter in November the Committee co-opted Mr. R. J. Welch, M.R.I.A., to fill the vacant position on the Committee.

The programme of Summer Excursions was carried out almost in its entirety, the proposed excursion to Slieve Croob having to be abandoned owing to the disturbed state of the district. The places visited and numbers present were as follows:—

Cloghan Point	...	27th May	...	18 Present.
Slieve Croob	...	3rd June	...	Abandoned
Lagan Canal	...	17th June	...	40 Present.
Ram's Island and Lang-				
ford Lodge	...	1st July	..	46 „
Hare's Gap and				
Diamond Rocks	...	22nd July	...	30 „
Ballycarry	...	5th August	...	32 „
Bangor-Groomsport	...	19th August	...	23 „
Magheramorne	...	2nd September	...	37 „
Lissanoure Castle	...	16th September	...	33 „
Greyabbey	...	30th September	...	38 „

In addition to the above an excursion was made to Nendrum (Island Mahee) on 9th September, in conjunction with the Archaeological Section of the Natural History and Philosophical Society.

A very successful *Conversazione* was held on the 10th April, in the Carlton Hall, 157 Members being present, the exhibits, as usual, proving most interesting and varied.

During the Winter Session the following papers were read, of which abstracts will be found in the Proceedings:—

1922.

24th October—"In the Heart of the Country," Rev. W. R. Megaw, B.A.

21st November—"In the Kingdom of Mourne," W. A. Green, F.R.S.A.I.

19th December—"The Life-Story of a Fish," Prof. Gregg Wilson M.A., D.Sc., M.R.I.A.

1923.

16th January—"The Zoology and Botany of Heraldic Charges," R. J. Welch, M.R.I.A.

20th February—"A Recently Discovered Prehistoric Site in County Antrim," R. Bell and S. A. Bennett, B.A., B.Sc.

20th March—"Some Recent Club Excursions," A. M'I. Cleland.

All the above subjects were well illustrated by lantern views, photographs, or specimens, the attendances of members being very good.

In June your Committee appointed Mr. S. A. Bennett, B.A., B.Sc., Delegate to the British Association Meetings, in Hull, in the ensuing September. The subsequent report of the Delegate was submitted to the Annual Meeting, held on 17th April; an abstract is included in the Proceedings.

The Hon. Treasurer will lay before you his Statement of Accounts, while the Hon. Librarian and the Hon. Secretary for the Junior Section will present their Reports.

In conclusion, your Committee desires to tender hearty thanks to:—Mr. and Mrs. F. M. Walker, of Whitehead; Mr. C. Spencer-Smith, M.A., of the Friends' School, Lisburn; Colonel H. A. Pakenham, D.L., C.M.G., and Mr. and Mrs. D. Graham, of Langford Lodge; and Captain Macartney, of Lissanoure Castle, for kindness and hospitality extended to Members of the Club on the Summer Excursions; to Mr. F. W. Henry for the use of the Carlton Hall; to the Press for publishing reports of the Excursions and Meetings; to the Superintendents of the Railway Companies; and to the Kindred Societies and Public Institutions who have favoured us with their publications.

(Signed) W. R. MEGAW, President.

A. M'I. CLELAND, Hon. Secretary.

16th April, 1923.

HON. LIBRARIAN'S REPORT.

The Library has been availed of by Members to a somewhat greater extent than formerly.

Under sanction of the Committee, and after consultation with the Librarian of the Queen's University, Belfast, a large number of books and publications of the United States Geological Survey was selected by Professor John K. Charlesworth, D.Sc., Ph.D., F.G.S., and myself, and handed over as a gift to the Library of the University. The

removal of these books frees a number of shelves which will be most useful for the better storage and arrangement of the remaining books and publications of the Club's Library.

Two volumes of "The Irish Naturalist," for years 1917-1920 (2 years in each volume), have been bound for permanent reference in the Library.

A list of exchanges with other Clubs and Societies will be found on another page.

(Signed) W. M. CRAWFORD.

REPORT OF JUNIOR SECTION.

The past year has been an exceedingly satisfactory one. This time last year we were merely making a beginning with a few members. We now boast a membership of 41, and have quite a fair proportion of Members who really take an interest in our work.

During the summer we held no less than 6 excursions, visiting Mealough and Purdysburn Glen, Carnmoney Hill, Drumbo, the Lagan Valley, and by special invitation the grounds of Sir Wm. Whitla's house at Lennoxvale, and Mr. R. S. Lepper's place at Carnalea. At the last two places we were hospitably entertained by the owners.

In the winter months we held 3 meetings. Mr. S. A. Bennett talked on prehistoric man and his habits; Mr. S. Freeland gave us a most interesting chat on birds as we went from case to case in the Patterson Museum; and Mr. R. J. Welch expounded the lore of the shell in a fascinating manner. In addition to these, we went, by special invitation of Rev. W. R. Megaw, to Mr. Edward Armstrong's lecture "At Home with Fur and Feather," in St. John's Hall, Ormeau Road. Besides these, Mr. R. J. Welch kindly arranged an unofficial visit to the "Northern Whig" offices to let Juniors get first-hand information about printing.

With regard to the finance of the Section, the General Committee decided last year to dispense with a subscription,

and the Hon. Treasurer was instructed to provide a "float" of £2 for working the Section. By using postcards for notices of meetings, etc., and printing these privately on a duplicator, we have been able to work very economically. However, as all expenses incurred since the resuscitation of the Section in 1921 had to be met from this £2, supplemented by a few subscriptions received previous to the alteration, I shall be forced to ask for a further advance.

The total expenses of the Section, including postage, printing of cards for the tea meeting of 1921, cards with printed headings for writing notices, etc., since June, 1921, has been £2 6s 10d; total receipts, including float, £2 8s 6d. Balance in hand, £0 1s 8d.

At the *Conversazione* this year the Section was allotted about double the table space which it had last year; a sure indication of progress. The table was well filled with exhibits of birds' eggs, pressed flowers, a novel exhibition of fresh flowers, etc.

We have made rapid strides since the Section was re-started, and I hope in the future that we may supply many energetic workers to our parent Society.

(Signed) J. R. H. GREEVES.

Deceased Members.

Mr. Charles Bulla.
Mrs. Hadden.
Mr. Joseph Malcomson.
Mr. J. G. B. Malcomson.
Mr. H. C. Marshall.
Mr. W. M'Millan, J.P.
Mr. W. H. Phillips.
Mr. W. Porter.
Mr. Joseph Wright, F.G.S.
Mr. H. B. Brandon, J.P.

Dr.

Hon. Treasurer's Account for the Year ending 31st March, 1923

Cr.

RECEIPTS.		PAYMENTS.	
To Balance from 1921-22	£0 16 4	By Printing of Proceedings	£45 17 9
„ Subscriptions—	...	„ Printing and Stationery	23 5 5
427 at 5s	...	„ Hire of Rooms	7 15 0
Paid in advance for 1923-24, 58 at 5s	106 15 0	„ „ Lantern	5 0 0
„ Balance from Excursions	14 10 0	„ Addressing Circulars, &c.,	4 10 0
„ Sales of „ Flora,” &c.	11 0 0	„ Fire Insurance	0 10 0
„ Balance Conversazione of 10th April, 1923	2 8 0	„ Subscription “ Irish Naturalist ”	2 0 0
	1 16 0	„ Gratuities	1 10 0
		„ Advertising 1923 Conversazione	1 5 0
		„ Delegate to British Association	2 2 0
		„ Incidental Expenses—	
		„ Rubber Stamps	£0 11 3
		„ Cheque Book	0 4 2—
		„ Printing Labels for Exhibits at Conversazione	0 10 0
		„ Binding 2 Vols. “ Irish Naturalist ”	0 9 0
		„ Postages	22 5 3
		„ Subscriptions—	
		„ “ The Naturalist ” (English) for 1922 and 1923	1 1 6
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T. EDENS OSBORNE, Hon. Treasurer.
A. A. CAMPBELL, } Hon. Auditors.
S. M. MACCOUN, }

16th April, 1923.

PROCEEDINGS.

SUMMER SESSION.

CLOGHAN POINT.

Date—27th May, 1922. Conductor—R. J. Welch, M.R.I.A.

Number present, 18.

Members and friends travelled to Whitehead by the 2-15 train to visit the raised beach and glacial gravels at Cloghan Point. Taking the road past the columnar basalt quarry, a section of greensand from which many fossils have been collected was shown. On the sea side of the tunnel were passed large masses of bladder campion in full bloom, with bright yellow patches of bird's-foot trefoil. Passing along by the old harbour the calcareted glacial gravels overlying the chalk were noted. Descending to the shore, the tall section of slipped marls with broken up masses of gypsum was examined, and the raised beach visited. Farther along the pholas borings on the marl near low tide were seen. Returning to Whitehead, the party was entertained to tea by Mr. and Mrs. F. M. Walker, Mount Royal. At the business meeting afterwards (Captain Chase presiding) 29 new members were elected. The return journey to Belfast was made by the 6-30 train.

THE LAGAN VALLEY.

Date—17th June, 1922. Conductor—S. A. Bennett, B.A., B.Sc.

Number present, 40.

Members journeyed to Hillsborough by the 1-45 train and walked back to Lisburn by the Lagan Canal. The Sweet Flag, though not a native plant in Ireland, grows in

great profusion along almost the entire route. Other plants observed at different stages of their development were the Water Rocket, the Forget-me-not, the Flowering Rush, and the Floating Persicaria. The last-mentioned was found in both its land and water forms, thus justifying its scientific name of *Polygonium amphibium* Linn. At Lisburn the party was entertained to tea by Mr. C. Spencer-Smith, M.A., Headmaster of the Friends' School, and Mrs. Spencer-Smith. At the business meeting afterwards (the President, Rev. W. R. Megaw, B.A., in the chair) ten new members were elected.

RAM'S ISLAND AND LANGFORD LODGE.

Date—1st July, 1922. Conductors—T. Edens Osborne, F.R.S.A.I., and David Graham. Number present, 46.

The members proceeded by char-a-banc, leaving the Museum at 10 a.m., to Langford Lodge. Towards the end of the journey, along a beautiful tree-arched road, the guelder rose—a native survivor of the old Irish woods—was seen in the high hedges with masses of the wild rose, mostly white or pale pink, but a few masses of a rich red were also seen here and there. The waters of Lough Neagh were rather rough for a pleasant passage to Ram's Island, so that only twelve ventured across. However, the demesne of Langford Lodge afforded ample scope for the energies of the botanists and zoologists.

The fine array of foreign flowering shrubs in full bloom, with the grand forest trees, among which were noted Lawson's cypress, the giant thuja, the tulip tree, and a towering Wellingtonia, presented a glorious vision of floral beauty. The Dog's Mercury, *Mercurialis perennis* Linn., a rare plant in the North of Ireland, was found growing in a flourishing colony—a welcome confirmation of an old record.

Other plants seen were the Meadowrue, *Thalictrum flavum* Linn., Dog Violet, *Viola canina* Linn., Sweetbriar, *Rosa rubiginosa* Linn., Skullcap, *Scutellaria galericulata* Linn., Hemp Agrimony, *Eupatorium cannabinum* Linn., Cowbane, *Circuta virosa* Linn., and the Gipsywort, *Lycopus europaeus* Linn. The zoologists hunted for mollusca and water beetles along the harbour margin, obtaining many of the latter and ten species of the former, the best of which were the small obese *Linnæa stagnalis* and *L. palustris* and the very high-spired *Valvata piscinalis*, so typical of Lough Neagh and Lough Beg. With these on a muddy sand bottom were some very young specimens of the swan mussel, one being under half an inch long. Land shells were not abundant here, only five common species being collected, but later, in the garden, a larger number, including some fairly big *Hyalinia cellaria* and very large specimens of Sowerby's keeled slug were noted. The very rare and local amber shell *Succinea oblonga* was keenly searched for, as it occurs at Shane's Castle in a similar habitat, but without success. The entire absence of *Hygromia striolata*, the rufous shell, was also noted. A keen search everywhere, even among the *Arabis albida* in the garden, failed to yield a single specimen, the first occasion in the North-east of Ireland in a large garden with *Arabis* where it has not been found.

After tea, a business meeting was held—the President, Rev. W. R. Megaw, B.A., in the chair, and four new members were elected. The President referred in felicitous terms to the kindness of Colonel H. A. Pakenham, D.L., C.M.G., in throwing open his charming grounds to the members. Mr. R. J. Welch, M.R.I.A., at the request of the President, gave an address on the special features of the Lough Neagh basin, including the antiquities of Ram's Island. With reference to what is known as "Lough Neagh petrified wood," he pointed out that the water of the Lough has no petrifying qualities whatever, the popular idea arising from so much fossil wood being found in Lough Neagh

clays or along the shores. This wood is derived from the waste of the interbasaltic zone between the Upper and Lower Basalts of the Antrim and Derry basaltic plateau, and is of Tertiary age.

A start for home was made at 7 p.m. via Crumlin, Glenavy, and Lisburn. The City Hall was reached at 8-30.

HARE'S GAP AND DIAMOND ROCKS.

Date—22nd July, 1922. Conductors—Robert Bell and S. A. Bennett,
B.A., B.Sc. Number present, 30.

Members assembled at the Museum at 10 a.m. and went by motor char-a-banc to the Trassey Bridge, via Ballynahinch, Castlewellan, and Bryansford. On arrival the party walked up the valley of the Trassey River as far as the Hare's Gap, which forms a col at 1,300 feet above sea level between Slievenaglogh and Slieve Bearnagh.

By the courtesy of the Belfast Water Commissioners, and with the permission of Colonel Wickham, Divisional Inspector of the Special Constabulary, the area under the control of the Commissioners was entered, and after a further climb of 300 feet the Diamond Rocks were reached.

En route the Starry Saxifrage *Saxifraga stellaris* Linn., was noted on the slopes of Slieve Bearnagh, and a little distance above the Diamond Rocks the Dwarf Mountain Juniper, *Juniperus nana* Linn., was seen in considerable quantity.

At the Diamond Rocks excellent specimens of the following minerals were obtained:—Smoky quartz, felspar, mica, topaz and beryl.

Tea was taken at the Tea Rooms, Newcastle Station, and after a pleasant run Belfast was reached at 8-30 p.m.

BALLYCARRY.

Date—5th August. Conductor—S. M. Macoun. Number present, 32.

The party journeyed to Ballycarry by the 2-15 train, and walked up through Ballycarry, visiting the old church and graveyard of Templecorran, and inspecting the many interesting memorial stones there. The road by Bellahill and Dalway's Bawn was then taken to Castle Dobbs demesne, which was kindly thrown open to the Club by the owner. The botanists devoted their attention to the glen and river bank; the archaeologists proceeded to Kilroot and had a successful hunt for flint implements at the raised beach. Before leaving the Kilroot Railway Station a business meeting was held (Mr. A. Albert Campbell, F.R.S.A.I., presiding), when four new members were elected.

BANGOR AND GROOMSPORT.

Date—19th August. Conductor—A. M'I. Cleland.
Number present, 23.

Members went to Bangor by the 2-25 train, and walked along the shore to Groomsport. The tide being out, a halt was made at Ballyholme Bay to examine the submerged peat bed. The party returned from Groomsport to Bangor by char-a-banc at 6-30.

MAGHERAMORNE.

Date—2nd September. Conductor—Robert Bell. Number present, 37.

The journey to Magheramorne was made by the 3-10 train from the Midland Station. Permission to visit the quarries and cement works had been given by the British Portland Cement Manufacturers, Ltd. On reaching the

quarries the conductor gave an interesting description of the geological features of the district, making special reference to some fresh sections which were being then exposed. Here was seen both red and blue boulder drift, the latter containing liassic material which yielded among other fossils the characteristic *Gryphaea incurva*. Beneath the blue clay appears what is apparently a section of thinly-bedded altered chalk, lying upon a stratum of red earth, this in turn resting on the ordinary chalk of the district. This section came in for a large amount of examination as it presented some puzzling features.

Among the fossils noted during the day were:—Three casts of large *Ammonites gollevillensis*, with diameters of some fifteen inches. *Pleurotomaria perspectiva*, *Rhynchonella robusta* and *Rhynchonella octoplicata*. *Pecten quinque-costatus*, *Spondylus spinosus*, *Ananchytes ovatus*, and a Shark's tooth, *Lamna appendiculata*.

The botanists were not idle, finding among the debris of the older parts of the quarries the following plants:—Dyer's Rocket, *Reseda Luteola* Linn., Tutsan, *Hypericum Androsaemum* Linn., Viper's Bugloss, *Echium vulgare* Linn., Common Centaury, *Erythraea Centaurium* Pers., Fleabane, *Pulicaria dysenterica* Goertn., Red Spur Valerian, *Centranthus ruber* D.C., Hairy Willowherb, *Epilobium hirsutum* Linn., and *Festuca rigida* Kunth.

After tea, a business meeting was held (the President, Rev. W. R. Megaw, B.A., in the chair), and six new members were elected. The party was then conducted through the cement works, the various processes of manufacture being clearly explained. Belfast was reached again about 9-30.

NENDRUM.

The Club joined with the Archaeological Section of the Belfast Natural History and Philosophical Society in an excursion to Nendrum, Mahee Island, on 9th September.

Rev. Canon Carmody and Mr. H. C. Lawlor gave addresses explanatory of the history of this ancient monastic foundation, and described the results of the excavations recently made.

LISSANOURE.

Date—16th September. Conductor—Dr. Deans.
Number present, 33.

Members travelled by the 10-0 a.m. train to Killagan Station, and thence by motor coach to Lissanoure. The old castle was first visited, and the conductor gave a short resumé of its history, as recorded in Monsignor O'Laverty's "Down and Connor." The party then broke up into sections and visited the several places of interest in the demesne and vicinity, including the old graveyard and remains of the church, a plantation grown by Captain Macartney on the German plan, and the modern church of Loughguile. A heronry was observed on an island (formerly a crannog) in one of the lakes. After tea, a business meeting was held, the President (Rev. W. R. Megaw, B.A.) in the chair. Eight new members were elected, and a vote of thanks passed to Captain and Mrs. Macartney for their kindness in allowing access to the grounds. The botanists noted the following plants:—*Poa nemoralis* Linn., *Carex ampullacea* Good, *Polygonum Hydropiper* T., *Listera ovata* Br., *Typha latifolia* Linn., *Hylocomium loreum* B. & S., *Plagiothecium undulatum* B. & S.

GREYABBEY.

Date—30th September, 1922. Conductor—A. M'I. Cleland.
Number present, 38.

The party journeyed to Greyabbey by motor coach, leaving the Museum, College Square North, at 2 p.m. On reaching the Abbey, the conductor gave an address on its

history and architectural characteristics. Having thoroughly inspected the ruins, the members resumed their seats on the coach, and proceeded to Ballywalter, where tea was served in the Dunleath Arms Hotel. Mr. S. A. Bennett, B.A., B.Sc., presided at the business meeting afterwards and briefly outlined the programme for the Winter Session. Belfast was reached again about 8-30.



WINTER SESSION.

NOTE.—*The authors of the various Papers of which abstracts are given are alone responsible for the views expressed therein.*

IN THE HEART OF THE COUNTRY.

The first ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 24th October, when the President (Rev. W. R. Megaw, B.A.) gave his inaugural address, using as his title "In the Heart of the Country."

He said—It is interesting to look back and recall the first wild flower or bird which challenged us as to its identity. I can distinctly remember the first wild flower which puzzled me. I wished to know its name, but no one around my country home could oblige. It grew on the wall which separated the yard from the garden, striking its roots into the crumbling mortar. I was told it was a weed, but that failed to satisfy, and I knew it for many years as "the-little-pink-flower-on-the-garden-wall." Later I recognised it as the common willow-herb (*Epilobium montanum* Linn), one of a large family which boasts among its members the handsome blooming sally (*Epilobium angustifolium* Linn).

I can remember, too, being puzzled about a strange bird which had its nest in a plantation near my home. It had its nest hidden in lanky grass among brambles. I had never seen a nest like it. It was placed on its edge, with the door at the side. Again, no one could enlighten me. So I named the bird the "ground-wren," from the supposed resemblance of the nest to that of the familiar jennie-wren, or "chitty-wren" as it was called locally in North Down. In my christening of it I came nearer than I knew to the bird's popular name—the bird was the willow wren. In after years, with better facilities in the form of books and companions versed in nature lore, one's acquaintance with plants

and birds increased more rapidly and securely, but for me the first challenge of nature to recognise her children is linked in special delight with the willow-herb and the willow-wren.

To be born in the heart of the country, far from town and railway, is to be, by a strange paradox, severely handicapped from a naturalist's point of view. For though wild life abounds, it abounds unnoticed; or at least the teeming variety is not sorted out. Those brought up on the land have but the sparsest knowledge of the flora which brushes against their feet from year to year. Even the birds, with a few exceptions, are undistinguished. The rook and the jackdaw are "crows"—I have heard the jackdaw called the "wee crow." The spotted fly-catcher, the whitethroat, the chaffinch are unnoticed. The fieldfare and the redwing are "thrushes," or lumped together as "felts" or "frost-birds." The swallow, the house martin, and the swift are all "swallows," without distinction. The chaffinch is called the bullfinch, or "bullfinch." The corn bunting, one man informed me, was the "hen yellow-yorlin, one of the few hen birds which sings!"

With regard to plants, troublesome and rank weeds such as the nettle, thistle, dandelion, colt's foot, "sit-fast" (creeping buttercup), "presha" (wild mustard), etc., are widely known. The others are weeds, a few having local names, especially if believed to possess medicinal properties.

It has been said of humanity that "life begins in the country and is perfected in the city." As a corollary it may be said that the perfecting of our knowledge of our country's flora and fauna is due to the denizens of our centres of population.

There is, moreover, confusion in the countryman's mind regarding many common plants. For example, the long-rooted cat's-ear is immediately named dandelion; the various buttercups are seen as one; the smaller nettle is not seen as distinct from the common nettle. What is stranger still is the fact that farmers fail to separate and fix the natural grasses, with the few exceptions of cock's-foot, crested dog's-tail, rye grass, and couch grass, and occasionally one or two others. I have found again and again an intelligent farmer puzzled by the obvious fact that fox-tail is not timothy. I have asked many farmers how many native grasses they thought there were in N.E. Ireland

and have received in reply numbers ranging from 12 to 20, no reply ever exceeding the latter number. To say that there are about 60 is to run the risk of being considered a degenerate from the city, crammed with cunningly devised fables, or one who is attempting to joke on a really serious subject.

If grasses, all important as they are for man and beast, remain undistinguished, what shall we say about the 40 odd species of sedges native to our N.E. counties? To but a very few they are non-existent. The word "sedge," to most people in both town and country, suggests brackish water and rank plant growths. That there are sedges to be found by the roadside, on mountain pasture and in the meadows, is regarded as a statement to be taken with a grain of salt. These most interesting plants are either entirely overlooked or relegated to the obscurity of unknown grasses.

One evening during a walk in the meadows near Lough Beg I pointed out to my farmer companion the beautiful sweet-grass (*Glyceria fluitans* Br.) which was growing luxuriantly in the broad shallow drains which divide the fields. He told me that his cows were so fond of this grass that they often slipped into the drains trying to reach it, much to their discomfort and danger. "Gorging themselves with glyceria had," he said, "a decided medical effect upon them," but he assured me that the cows *knew* the remedy. "Over there grows a hard blue grass," he added. "They eat it and are cured." We examined the "blue grass" and found it to be a beautiful, wide patch of the carnation sedge (*Carex panicea* Linn). He was amazed when I called his attention to its fruiting stems. For over fifty years he had walked those meadows and not till that moment had he *seen* the fruit of the carnation sedge. One plant he had seen and admired. It carpeted the soft, peaty sides of an old "cash" (*i.e.*, a bank of uncut turf used as a road), but he had been careless as to its name until the preceding year, when visitors from across the channel had asked him what it was. He confessed to me, rather sadly I thought, that he had been unable to tell them. When I named it heath bedstraw (*Galium saxatile* Linn) he kept repeating the words for some time, remarking: "I must try and mind that, but I'm sure by supper time it will be gone."

Although the real countryman remains contentedly ignorant of the dense and varied flora which is his constant companion, he is not without his queer untutored lore of the fields. Certain plants force themselves upon his ken in spite of himself. He begins and continues life with one clear distinction in his mind—the distinction between crops and weeds. The culture of crops is his life's work, and this implies the destruction of weeds. But among the much-despised weeds he must make distinctions, and that for several reasons. Leaving out of account rank growths such as ragwort, nettle, etc., he may find on his farm a showy casual which attracts his eye and arouses a mild curiosity. Among flax, which is sown from foreign seed, there often occurs an attractive plant called gold-of-pleasure (*Camelina sativa* Cr.). Again and again farmers, generally most unobservant, have brought me specimens of *camelina* for identification. One farmer told me that when he sowed Dutch flax-seed *camelina* invariably appeared, but that when he sowed Russian seed there was no sign of the plant.

The well-known facts regarding the sexual reproduction of plants remain ungrasped by the man in the heart of the country. In most cases he is simply unaware that any such process takes place. When fruit fails to set on his apple trees frost is the sole explanation which he gives. Yet the idea of sex difference in plants is not wholly absent from his mind. But it is a differentiation not in the flowering parts (he knows nothing of *stamens* and *stigmas*) but rather a differentiation (quite unscientific) between one specimen and another founded on outward and unessential points. James Russell Lowell names the birch "most shy and lady-like of trees." It is this same idea expressed more crudely which we find in the minds of country folk. A rough sturdy plant suggests the masculine; a smooth, more elegant specimen appears feminine. Thus tansy (*Tanacetum vulgare* Linn) is known to many as the *she-benweed*. And a variety of common thistles almost free from spines (var. *setosus*) goes by the name of the *she-thistle*.

Again, the appearance of a plant in abundance in one spot and its total disappearance the following season, its place being taken by some other species, gives rise to strange conclusions, viz.:—that the one has changed into the other.

An old farmer assured me some time ago that while timothy (*Phleum pratense* Linn) was a valuable grass the first year it was sown, and perhaps for the second and third years, yet it was a "bad grass," as it degenerated into couch-grass, the latter being a plague. I believe this is a somewhat prevalent idea. If the timothy dies out in a few years and couch appears, the inference follows that timothy has fallen on evil days and become scutch-grass or couch.

The only other country lore of plants which I will mention is that connected with medicinal uses. Being thoroughly conservative, the countryman sticks to a few favourites. These few so-called medicinal herbs possess for him all the healing and preventive qualities claimed by the vendor of patent medicines. Hanging from the rafters under the sodden and thatched roof you may notice a handful of tormentil, or rose-noble (the knotted fig-wort), or ground-ivy, blackened by peat smoke and shrunk almost beyond recognition. These constitute the most marvellous medicine chest conceivable, yielding remedies for the most varied ailments.

"Robin-run-the-hedge for hives,
Rose-noble for the ague,
Tormenting root drink all your lives,
To banish ills that plague you."

Herbal treatment appeals to the countryman with a power that is almost uncanny. I knew a wholly illiterate man who proposed to cure erysipelas with a concoction of sage leaves boiled in milk. The *modus operandi* was as follows:—The poor patient drank the nauseating, acrid juice of the stew and then the roasting hot leaves were applied to the spot affected. I have seen a patient submitting without a murmur to a treatment so excruciatingly painful that, had a certified physician attempted to enforce it, he would most certainly have met with physical violence.

In every countryside there are recognised cow and horse doctors who prescribe and administer "cures" held by many to be infallible. The cure is especially believed in if its secret has been handed down from father to son. The ingredients of these so-called remedies are a carefully-guarded secret, nor does the possessor part with his lore until death is certain and near—then the secret is bequeathed, with many cautions, to the eldest son or daughter. I remember an aged man confessing to me that, owing to the in-

gratitude of man, he meant to carry to the grave the mysteries of a certain cure the secret of which had been in his family for many generations. There is, however, a growing suspicion regarding the potency of these occult remedies. "He was a cow-doctor," said a man to me one day at the funeral of a neighbour, "and I may say he has been the death of more cows than all the vets. in the country." The witty, left-handed compliment to our veterinary surgeons will not pass unappreciated.

To the city dweller life in the heart of the country suggests dull, unrelieved monotony, at least during the winter months. The real lover of nature finds it the very reverse. When the migrants leave in the autumn their place is taken by flocks of fieldfares and red-wings. Though these last-named do not nest with us they brighten the bare fields with their welcome presence and help to maintain the balance of bird life in the district. When the flowers pass and the grasses sink into low tufts and the hedgerows change into a network of chocolate coloured twigs then mosses and liverworts come to their own. Hidden during the summer by the dense foliage, they now appear in all their beauty of green and gold. Autumn is for them the return of spring. There is beauty, variety, interest everywhere for the eye that can see.

Let us stand for a few moments in a remote country lane and let the month be February. What has the lane to show at such a time? Let us look and see. There over the hedge hangs a spray of bramble, with the leaves turned to a red copper colour by the frosts and bitter winds. Note the ivy trailing over the ground, its leaves darkened by the cold; a stem or two clings to the stump of an ash tree, how prominently the veins stand out, more marked, it seems to me, than on a summer day. The catkins of an alder brighten the hedgerow with their pale golden tassels. They show best on the suckers of a few years standing which have come out near the root and grow sheltered from the north-east. Close by the alder a dandelion bears one weak flower and a plant of barren strawberry boasts two blooms. On the opposite side of the lane is a mossy bank covered with *hypna* (the large feather mosses), four species interwoven. A yard or so away they are torn up and lie loosely in tufts at the foot of the bank. Thrushes and blackbirds have been busy ransacking

the larder—searching for insects. This moss-bank is, indeed, the birds' cold storage. Clamped tight between the forks of a thorn is a wren's nest. Invisible in June, it catches the eye at once now. Its outer covering is wholly composed of two common mosses (*Hypnum purum* and *Hypnum splendens*). Mother wren had not far to travel for the material of her home. She picked up the loose and withered moss stems scattered by the thrushes of last winter. Note now the value of her instinct: mosses, no matter how shrunken, absorb moisture with an amazing rapidity. Once fully saturated, they present to the elements a waterproof covering. The hair lining of such a nest remains dry in spite of summer showers. Enclosed in a water-jacket the temperature of the nest is preserved from extremes. Who will deny the charm which the heart of the country presents to the naturalist?

For a period of nine years I was in possession of a field about an acre in extent. During that period the field was unbroken by the plough. I made a note of its flora and found it to contain 204 species. In this total there were 20 grasses, 13 sedges, 36 mosses and hepatics. The north end of the field was of a boggy nature and here grew the bottle-sedge (*Carex ampullacea* Good.) Year by year the number of its fruiting stems became less until in the year 1915 it carried but one. Since then the tufts, shrinking in size and diminishing in number, have been barren. Soon the end will come and the flora of the little field will mourn the passing of an illustrious citizen. In this field I made my first acquaintance with the rather rare pale-sedge (*Carex pallescens* Linn). This plant, I am pleased to say, has held its position during the last decade and shows no sign of sharing the fate of its brother, *ampullacea*.

A day's excursion into the country, however often repeated, cannot give that close and intimate association with nature in which the secrets of her heart are revealed: her stray moods, her freaks, her fancies, her kindness to one group of her children, her apparent severity to another. Not only has each season its originality, but within a single season strange developments may occur. Dame Nature will turn a simple flower compound and a compound flower simple, selecting one out of a wide patch and on this working her freakish fancy. I have seen the bulbous butter-

cup (*Ranunculus bulbosus* Linn.) completely petalled, *i.e.*, all the stamens expanded into petals. Next season it returned to normal. I have seen ribwort plantain (*Plantago lanceolata* Linn.) viviparous, a little forest of leaves elevated on the flower stock. This was in autumn. Then came frost and the tender leaves melted into a black slime. Although she seldom asks her moss flora to grow on a pine trunk, she will push out green lines of moss on a tar-macadamed foot-walk.

The flora of a single field studied year by year presents strange contrasts. Some growths flourish each year, holding firmly to one chosen spot; others thrust out their borders and swarm over an ever-increasing area; then comes a season, to all appearance normal, and the ranks are mysteriously thinned. One year a farmer in our district sowed red and alsike clover in a large field. To his disappointment not a stalk of the plant appeared except in one place, *viz.* :—just inside the gate, a spot which for years had been trampled into a quagmire by his cattle as they impatiently waited for milking time.

Plants appear as casuals in grazing land, and their advent is hidden in obscurity. I have seen chicory on two occasions growing in grass lands far apart. These lands had been fallow for more than a decade when unexpectedly chicory appeared, remained for a couple of seasons, and then was gone.

By a quiet laneside, the flora of which was specially familiar to me, I was astonished to find one year (1911) half-a-dozen plants of wall-whitlow grass (*Draba muralis* Linn.). The nearest known station for *Draba* lies eight miles distant by the wall of an old church. How did the plant reach its new station? Who can tell? However, one season satisfied its wandering spirit, there being no trace of whitlow grass in 1912 or after.

Life in the heart of the country bristles with varied interests, and there are no dull months to the true lover of nature. Let me give two extracts from the diary of an amateur:—"December 7th. A mild, damp day; heard the robin, the song thrush and the wren sing, and saw a black-berry spray in bloom." "January 8th. Four inches of snow on the roads and frequent snow showers—the wind north and bitterly cold. How delightful on such a day to

see a bullfinch with his bright plumage against the pure white of the snow. The little chap was searching the hedge opposite and I stopped, wondering what he found to eat. He didn't seem to resent my inquisitiveness in the least, although I was within twelve feet of him. His strong bill was cracking seed and my curiosity was unappeased until I found out the fare. The seeds proved to be those of the blackberry. Here and there on the withered sprays of bramble were a few ripe seeds left behind by the departed fruit. I followed the bullfinch's example and tasted the seed. The flavour and fragrance peculiar to blackberry fruit were still there, distinct enough to give me (and the bird) quite a delightful reminiscent whiff of mellow September. Cordial thanks, Mr. Bullfinch, for the unexpected treat!"

Living in the country the year round; walking the fields more often than the roadway; familiar with the grass-grown lanes and the little beaten paths over hill and moor; stopping by the dilapidated cottage with its torn and sodden thatch hiding its decay under thick wads of moss: one cannot fail to gather a mental diary of facts and fancies. The facts are unconnected, like beads without a string; the fancies rest, perhaps, on the flimsiest foundation. As a fact, I have noted that the lark sings flying horizontally before it sings flying vertically. In the first months of the year, when a spring day comes as one born out of due time, then the lark flying low across the hedgerows pours forth its rich, sweet song. This I call the lark's rehearsal, and thus fancy adds its gilding to the fact.

Again, there is an old couplet which runs as follows:—"Kissing's out of season when the whin is out of bloom." For many years I kept a note of the months in which I saw whin blossoms; in no year did I see them in November. This may be due to limited observation. I did not keep a diary in regard to the other matter mentioned in the couplet.

Amongst our humbler vegetation the stoutest resistance offered to winter's levelling hand is surely that of the crested dog's tail, when all else withers and falls the wiry stems of this hardy grass stand firm and erect. They are called in the country "winnel straws." Cattle reject them, except when mixed in mown hay; but horses eat them with seeming relish.

About fifteen years ago a friend, observant of feathered life, told me that he remembered distinctly one red-letter day in his school life, and for the following reason:—A pair of strange birds had made their appearance and were nesting near the school, and the master brought the children to view the nest. The birds were starlings, and were at the time feeding their young. This was the first starling's nest seen in that part of North Down. The date would be fifty-five odd years back. It would be interesting to have confirmation or correction of this story.

Round the older farmhouses and cottages it is interesting to note plants which are known to the country folk as herbs, often pronounced "Yerbs." These are potent in regard to many common ailments in man and beast. Sometimes they are treasured not because of their present use, but because a bygone generation employed them in the working of cures. Let me give one example in the greater celandine, a poppy containing a yellow and poisonous juice, which is to be found in many a neglected garden, or by a laneside near the site of a dwelling which has all but disappeared. I have never known the greater celandine used as a specific, but I have seen its suggested removal resented by the owner of the property on which it was growing. Why this resentment? Herein lies perhaps the sole explanation. One afternoon when cycling I stopped by the roadside, near an ancient homestead, to chat with a worthy farmer who was gazing with serious face at half-a-dozen cows which in turn were gazing at him with that placid look only cows can assume. "There's something wrong with them," he began, nodding towards the beasts, "they're off their feed and aren't chewing their cud." This was indeed serious, and soon we were engaged exhausting theories in our attempts to meet the case. He met each of my suggestions with a negative that was decisive and final, but could suggest nothing himself. Just then I noticed on the near side of the hedge, but within easy reach of the cows' tongues, greater celandine growing in some abundance. A hasty examination of the plants showed that they had been browsed, and immediately I believed I had discovered the cause of the lassitude in my friend's cattle. I drew his attention to the celandine, working off a little homily on the subject. He followed me without interruption until I came to the peroration, which advocated the immediate destruction of the poisonous plant.

"No, no," said he, "it will never be touched in my time. My mother cured many a sore sickness with that yerb." I pointed out to him that there were other plants of celandine in his garden, beyond reach of his cows. But he held firmly to his position. One evening at dusk I was passing his house; all was quiet; I had the road to myself. Well, I perpetrated an act of vandalism, or was it sacrilege? Anyhow, the greater celandine is not to be found by the roadside where it once flourished. My farmer friend and I have discussed many subjects since that date, but our private "Hansard" will be searched in vain for the words "cow" or "celandine."

In drawing this incoherent paper to a close let me tell of a clerical gentleman suddenly transported from the heart of the city to the wilds of the country. His spare time hung heavily on his hands, all his tastes being city born. The heart of the country was unutterably dull and he felt, like Alexander Selkirk, "out of humanity's reach." Spring came and with it a stranger who arrived to botanise in the district. The transplanted one, after showing a mild and somewhat cynical interest in the pursuit of the stranger, found one day that he had been infected. Why, after all, should he not botanise? The stranger went his way at the end of a few days. The transplanted one purchased a half-crown book on "How to Identify Flowers" (the author's name was Fox) and this, together with a linen glass and a pair of good eyes, was all his outfit. The stranger, before departing, left his address, and a promise to assist the beginner in every way possible. Week by week the transplanted one posted box after box of plants to his new friend, for confirmation or correction. Amazing progress was made, and as the season wore on a vision of a grand total of 300 plants, seen and identified, promised to become a reality. It was a game, a race, with 300 as the winning post. He reached 299, "faint yet pursuing." Then, when the issue hung in the balance, a few plants of *Leontodon hirtus* Linn. came to his aid. He had won his game; he had achieved his THREE HUNDRED! A nameless (and somewhat shameless) bard depicts the frenzied struggle and the happy consummation in the following lines:—

Another weed, another weed, another weed sundered,
Torn from its native lair—O for Three Hundred!

Quickly the bloom months flew;

Slowly the total grew.

Ye gods! for something new, towards my Three Hundred.

Sepals five, petals five, stamens—he wondered.

Six, eight, or are there ten? What if he blundered?

What if he jotted down

Something he hadn't found?

True, 'twould be gaining ground—perjured Three
Hundred!

Bacey box, chocolate box, biscuit box plundered,

Crammed with a foreign freight—weeds by the hundred.

Labels with numbers on

Posted to expert John.

Is this *Leontodon*? Bravo! Three Hundred!

Down went the Padre's "glass"—joyous, he thundered:

"O the wild charge I made for that last hundred!"

Then, in a gentler key:

"'Fox' take thy rest," quoth he,

"Henceforth *taxed weed* for me—now I've Three
Hundred!"

The address was well illustrated by a series of fine lantern views, especially a set of twenty showing the four seasons of the year, which were greatly appreciated by the large audience. In the subsequent discussion the following members took part:—Messrs. N. H. Foster, F.L.S., M.R.I.A., M.B.O.U.; R. J. Welch, M.R.I.A., and S. A. Bennett, B.A., B.Sc. With the election of thirteen ordinary and two junior members the proceedings terminated.

IN THE KINGDOM OF MOURNE.

The second ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 21st November, when Mr. W. A. Green, F.R.S.A.I., gave a lecture on above subject. The President (Rev. W. E. Megaw, B.A.) occupied the chair.

The lecturer dealt with the ancient history of Mourne, and described the Norman Keep at Greencastle and the antiquities around Kilkeel, Newcastle and Dundrum. Reference was made to the prehistoric hearth uncovered some years ago by the B.N.F.C. at the eastern end of Cranfield Bay. Loughisland Reavy, its cashel and souterrains; the scenery of the Mourne Mountains, and contributory geological causes; the path of the Silent Valley glacier, and the Diamond Rocks and Castles of Kivittar were rapidly passed in review. The lantern slides from the lecturer's own negatives were very fine.

At the conclusion of the lecture a short discussion took place, joined in by Messrs. R. J. Welch, M.R.I.A.; John Holness, and the Vice-President (Mr. J. A. S. Stendall, M.B.O.U.). Three ordinary members and one junior member were elected.

THE LIFE STORY OF A FISH.

The third ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 19th December, when Professor Gregg Wilson, M.A., D.Sc., O.B.E., M.R.I.A., delivered a lecture to a large audience. The President (Rev. W. R. Megaw, B.A.) presided.

It is extraordinary, the lecturer said, that so little is known of the life of the fishes that abound in the waters all around us. Till quite recently even fishermen and naturalists were utterly ignorant of the life story of fishes: it was not till as late as 1864 that the great fact was discovered that most of our fishes produce eggs that drift about in the surface waters. For long it was generally believed that fishes spawned in waters close to the shore and that the spawn was actually secured to weeds or gravel at the bottom. The number of eggs produced by fishes is often enormous, amounting in some cases to ten or even twenty millions. But those fishes that take most care of their eggs seem to require to produce fewer than their neighbours. The time required for hatching-out also varies enormously—from a few days to a few weeks, according to temperature, in the case of our common food fishes, and extending to five months or more in the case of such fishes as skates, which have large eggs with much stored food. The newly-hatched

fishes are usually utterly unlike their parents, and are often protected by being quite transparent. They abound in surface waters and feed on the microscopic organisms that exist there. A good deal of work has been done recently on the feeding habits of the larvæ forms, and their skill in stalking their prey and in dodging the spines that protect some of their victims is remarkable. As both eggs and larvæ are at the mercy of currents the drift of the waters is of great interest, and study of this subject has brought home to us the fact that no district is independent of its neighbours. That is the justification for an international scheme of fishery research.

The migrations of fishes are as interesting and mysterious as those of birds. One fact stands out clearly, namely, that the spawning migrants tend to swim against the currents to regain the position lost by the drifting eggs or larvæ. The enemies of fishes are many, but they have many protective devices. Colour adaptations and mimicry play no small part in securing freedom from attack. Spines, and in some cases poisonous secretions associated with spines, are also valuable safeguards. And fishes do not depend solely on inherited methods of defence. Like other animals, they learn by experience. Often what we think of as instinctive proves on investigation to result from rapid education.

At the close of the lecture, which was illustrated by a fine series of lantern views, a short discussion took place, joined in by the President and Messrs. R. S. Lepper, M.A.; J. M'Caw, B.A.; J. Holness, and R. J. Welch, M.R.I.A. Ten ordinary members and one junior member were elected.

THE ZOOLOGY AND BOTANY OF HERALDIC CHARGES AND LADIES' BOOKPLATES.

The fourth ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 16th January, 1923, when Mr. Robert J. Welch, M.R.I.A., lectured on above subject to an exceptionally large audience. The Vice-President (Mr. J. A. S. Stendall, M.B.O.U.) presided.

Mr. Welch having pointed out that over thirty years had elapsed since their then President, Mr. John Vinycomb, M.R.I.A., had lectured on an heraldic subject, proceeded to describe the animals most commonly used as charges on the shield, as crests or as supporters—lions, wolves, wild boars, elephants, horses, deer, squirrels, wild cats, etc. He then exhibited a number of slides, some of them coloured, of mythical animals—dragons, wyvern, cockatrice, sea-horses, etc., these last as supporters in the city arms of Belfast and Cardiff. Next, the heraldry of fish was illustrated by a number of slides from Vinycomb, Sherborne and other bookplates: the dolphin (a fish in heraldry), salmon, pike (lucie) and gudgeon, with some trout from both English and Austrian old and modern coats of arms. Crabs and lobsters, both as charges and crests, were then treated of, a coloured slide of lobsters (red!) from an Austrian nobleman's arms being shown. Shells then followed, "canting arms," illustrated by the three "buckies" of the poet Shelley's family; the Pilgrim's Badge by the scallops *Pecten jacobaeus*, and some bees by charges on a lady's bookplate.

The Red Hand of Ulster as a dexter hand, not a left hand, was pointed out, with the utter impossibility of such a charge as a "bar sinister" in British or Irish heraldry, the mistaken term arising from the fact that our bend sinister is the *barre sinistre* of French heralds, on which the arms of illegitimates are charged, as they were in England in the early days of coat-armour.

The lecture finished with the exhibition of many slides of ladies' bookplates and those of presidents, secretaries, and members of the club, mostly of a natural history or archaeological character, by Mr. John Vinycomb or his old pupil, Mr. J. W. Carey.

At the close the lecturer answered some questions by members, and eight ordinary and two junior members were elected.

This was the first fully-illustrated lecture on the subject ever given in Ireland, over ninety specially made slides being used.

A RECENTLY-DISCOVERED PREHISTORIC SITE IN CO. ANTRIM.

The fifth ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 20th February, the Vice-President (Mr. J. A. Sidney Stendall, M.B.O.U.) in the chair. Mr. S. A. Bennett, B.A., B.Sc., read the following paper, which he had prepared in collaboration with Mr. Robert Bell:—

That part of the Chalk outcrop which runs north and south from Cave Hill, and the fields and uplands adjoining it, have yielded a goodly supply of flint flakes and implements which are evidently the handiwork of primitive man. During the past few years attempts have been made to trace these flakes to their original sources, and this paper is intended to lay the results of these researches before the Club.

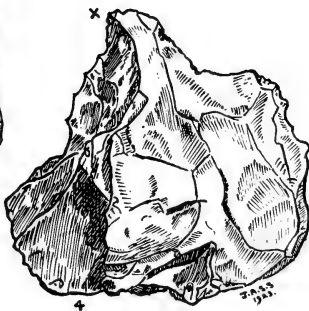
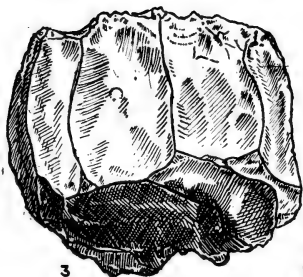
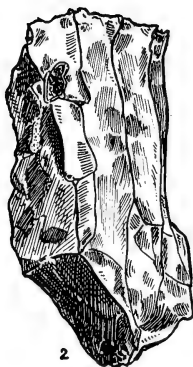
In the early part of the last year (1922) Mr. R. Bell was fortunate enough to discover a site where the number and character of the worked flints leave no doubt that it was occupied in early times by a colony of flint-workers.

DESCRIPTION OF THE SITE.

The area is situated within the County Borough of Belfast on the eastern face of the Black Mountain, at an elevation of 800 feet above sea-level, one third of a mile from the end of the Ballygomartin and Whiterock roads. It lies on the natural talus slope of the hill, below the upper limit of the Chalk and has been traced at intervals for a distance of about 300 yards. The southern end of the area is 30 to 40 feet above an outcrop of Glauconitic Marl seen in the roadway above Mr. Hamill's farm. Further north in the area occupied by primitive man the Yellow Sandstones of the Cretaceous series are well exposed. Two small stations, each roughly 20 yards square, have been thoroughly investigated by Mr. Bell. These stations will be referred to in this paper as Stations A and B.

Station A lies at the southern end of the area on a stable talus slope where there is no evidence of recent slipping. Here the solid chalk is reached at a depth of 4 to 5 feet. Up to this depth flint flakes with their associated

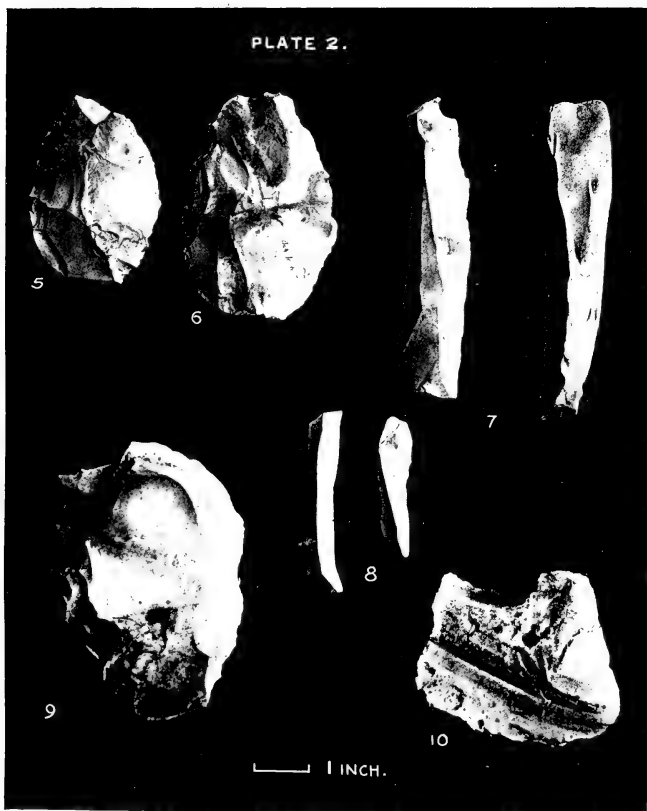
PLATE 1.



INCHES. 1 2



PLATE 2.



R. J. WELCH, Photo.

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NATURAL
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cores occur in abundance. The flakes are embedded in a brown matrix of hill-wash consisting of decomposed basalt, fragments of chalk, and unworked flint. At a greater depth than four feet the worked flints disappear and the talus consists of larger masses of chalk and more or less weathered basalt, passing at once into solid chalk.

The colour of these buried flakes and cores is a fairly uniform dull milky white, the cores being somewhat the darker of the two. When freshly dug, however, both flints and cores are bluish, the colour approximating to that of a freshly broken flint nodule, but they fade whiter on exposure to the air. The greater part of this change is usually complete in a few hours.

Where a flake has lain for a long time exposed to the air, bleaching has taken place and the exposed surface shows a fine milky patination, though some flakes show an unequal patination, passing from dull blue grey to pale brown.

The more northerly Station B is near the outcrop of the Yellow Sandstones and is situated on a slipped part of the talus slope, the line of demarcation between the stable and unstable portions of the slope being evident when viewed at a distance. Here the flakes are found lying on the surface mixed with fragments of chalk. There is no brown earth which results from the decomposition of the basalt at this spot. Immediately behind this station the Chalk crops out in a bold escarpment. The flints which are still *in situ* in these Chalk beds show a brilliant white patination which is very striking.

Here in Station B the flakes have a quite different patination from those found in Station A. They are not uniform in colour but beautifully mottled, blue or blue-brown and white, somewhat more lustrous and not so dead in colour as the flakes which have been buried.

This mottled patination strongly resembles that of flints from S.-E. England which have been subjected to the action of the chalky boulder clay. Occasionally, however, where the flake has been exposed to the air for a long time the patination is rougher in texture and is of a beautiful light cream colour, quite different from the milky white patination of the flints from Station A. In this section, too, the deposit is much shallower than in Station A, no worked flints being found at a greater depth than 6 inches or a foot at most.

GENERAL SURVEY OF THE FINDS.

What strikes one at once on a visit to the area is the enormous number of flakes which are found there. They turn up in any quantity, scattered indiscriminately over and through the small part of it which has been dug over. The flakes vary very much in size. Some of them run up to six inches in length and are very massive, quite the biggest flakes that have been found in N.-E. Ireland. As a contrast some of the flakes are extremely small and slender. These small flakes are found in abundance, and never show any secondary working. They are quite unweathered and the edges are as sharp as on the day they were first struck off. Occasionally flakes of medium size are found which appear to have been trimmed on the side opposite the bulb of percussion. Compared with the large number of flakes which are found on the site, the cores from which the flakes were derived are relatively few in number, and it is suggested by the authors that the cores were made into implements on the spot and then carried away. A general survey of the finds leaves no doubt that Mr. Bell has discovered a pre-historic site of a very peculiar type; nothing more or less than a flint implement factory, where the work had been carried out on a commercial scale. It was certainly not a place of permanent residence, as the absence of hearths, charcoal, or bones of animals which had been eaten distinctly proves. Most probably further search over the talus slopes of Co. Antrim will yield other sites of similar character.

We submitted a selection of our finds to Mr. Reginald A. Smith, F.S.A., the Keeper of the Stone Antiquities in the British Museum. He is of opinion that our pre-historic workers had reached the cultural stage of the race whose implements are found in such quantity at Grime's Graves, Weeting, Norfolk.

This site at Grime's Graves consists of over 300 pits with connecting galleries from which flint has been mined. It is being systematically examined by the Prehistoric Society of East Anglia. Their reports since 1914 have been published annually and are in the Club's Library. They have, we need hardly say, been of great value to the authors of this paper.

If Grime's Graves can be dated we shall have a definite guide as to the date of our site, but unfortunately the experts differ as to the date of Grime's Graves, so that until this question is settled we are thrown on our own resources. Here it may be as well to state that Mr. Smith stands almost alone in his claim for the palaeolithic age of Grime's Graves; most of the experts incline to the neolithic view.

PREHISTORIC CHRONOLOGY.

Before discussing the age of our finds it may be of advantage to give a short outline of pre-historic chronology so far as that may be done from a study of the artefacts which has come down to us.

Leaving the much-discussed eoliths* out of consideration, we have first the early palaeolithic implements of the drift. These are essentially cores, the flint flakes which came off in the making having been rejected. The retouches are coarse, broad, and conchoidal, leaving strongly marked concavities on the surface of the implement.

Later on, in mid-palaeolithic times, we first meet with implements which are essentially flakes and not cores. Most of the flaking is done whilst the implement is *in situ* on the original block of flint and then with a single blow an almost complete implement is detached.

This is clearly a distinct advance in culture. It effects a great saving in labour and produces an implement much lighter in weight and with a sharper cutting edge. These implements are associated with the early cave men of the Mousterian period, and in their later development show "stepped" chipping on their edges, in which short scaly retouches follow one another, becoming gradually smaller as they approach the extreme edge of the implement.

In later palaeolithic times—but still in the period of the cave men—we have the Aurignacian culture in which the number and variety of new forms of implements is almost bewildering—they are characterised by a very definite style of marginal dressing. This was the period of the cave artists and is followed by the period of Solutrean culture, the latest phase of palaeolithic workmanship.

In the Solutrean implements fine thin scales are flaked by pressure from the whole surface of the implement, sometimes giving a most artistic effect. Following this period,

*Vide post, p. 255.

after an interval which has not yet been bridged, we come to the neolithic age, the age of polished stone implements; there is, however, a distinct gap in our knowledge of pre-history between the palaeolithic and the neolithic ages.

Transitional stages have been recently discovered on the continent which bid fair to remedy this want of knowledge, one important one at Campigny in the Seine-Inférieure (France) (1) which is stratigraphically post-palaeolithic and pre-neolithic. It is referred to as the Campignian stage and is characterised by the following facts:—

- (a) It adds two new implements to those already possessed by palaeolithic man, *viz.*:—the Campignian pick which is very much like the Larne celt (so-called), and the kitchen-midden axe which occurs on our raised beach sites.
- (b) There are no polished stone implements.
- (c) Some pottery fragments occur from which we may presume that the making of pottery preceded the art of polishing stone.

These cultural stages, the Mousterian, the Solutrean, and the Campignian will be found to be of some importance in discussing the age of our site.

LIST OF THE DISCOVERIES.

The following specimens were submitted to Mr. Smith:—

1. A typical core from a depth of 4 feet from Station A. (*Plate I., Fig 2.*)

2. A Tortoise core (2). In this specimen the lower face covered with the original crust. The two upper faces have been trimmed so as to give a general convex surface to the upper side by blows directed from the circumference. A platform has been prepared at the butt end, and a blow delivered there would detach an implement ready made. For some reason or other that blow was never struck, the implement was never completed, but we have what is much better—an implement in the making. It is, in Mr. Smith's opinion, an artefact of supreme importance, "an unstruck Tortoise Core," for it practically dates the site with some certainty; the type specimens of

Tortoise Cores from the Thames and Somme Valleys are recognised on abundant authority as belonging to the Mousterian age. (*Plate I., Fig. 3.*)

3. Some of the large and small flakes. Nothing more need be said of these except that a few of them show small areas of "porcelain gloss," a deposit of silica, the origin of which is unknown, and one of them is a red flake showing a hinge fracture. This flint has not been burnt (*vide* Mr. Smith and other authorities) as is proved by the absence of "crackling," but is stained with iron. (*Plate II., Figs. 7 & 8.*)

4. A series of implements showing "spurs." At first sight these implements resemble rough cores, but there is in all of them a roughly-worked edge with a projecting point or spur. (*Plate I., Fig. 4.*) In some of them the projecting point is formed by the junction of three main planes of flaking, on others the spur occurs at some point on the edge of the implement. It is difficult to see to what use these implements could have been put, but they appear to be complete, though rough artefacts, and the spur seems to have been intentional. They are not uncommon on the site and can be paralleled from Grime's Graves, where the spur is occasionally accentuated by an artificial notch on either side of it.

5. This curious implement was got in Station B, 6 inches or so from the surface. It was described by Mr. Smith as a "conical plane with spur." Its use is unknown, but the type is frequently met with in Station A at all depths. (*Plate I., Fig. 1.*)

6. Two massive scrapers both showing (a) ripple marks; (b) mottled blue and white patination which, in flints found in the East of England, occurs on the surface of flints which have been glaciated and is referred to as "Chalky Boulder Clay Patination;" (c) surfaces of dull slaty grey patination which are much later than (b). They have been re-chipped in later times, and this re-chipping affords some evidence as to the date of the site. (*Plate II., Fig. 10 shows one of these scrapers.*)

7. A rough hand axe on which most of the chipping was done before it left the core.

8. This curiously-shaped piece of flint which the authors at first regarded as a waste core turns out to be an implement of a very definite type. It is a steep-ended plane or end-scraper. The underface is plane or has the bulb of percussion planed away. An almost exact fac-simile is figured in the Grime's Graves Report (3). Our specimen shows secondary working of a rudimentary character. (*Plate II., Fig. 9.*)

9. An implement which was named by Mr. Smith "A Leaf-shaped Axe of Proto-Solutrean Type." It is ovate in shape, of length 3 inches, breadth 2 inches, thickness $\frac{5}{8}$ inch, and is patinated. The bulb of percussion which was once present has been trimmed away by secondary flaking. It is a finished implement, and is not to be regarded as a stage in the manufacture of a neolithic celt. In the neolithic celts the actual working edges are at the ends; in this implement they are at the sides. There is an almost exact parallel to this in the Grime's Graves Report (4), though our specimen does not show such sharp edges as the one in the publication referred to. (*Plate II., Fig. 5.*)

10. The last and best implement of the series, a leaf-shaped implement like the preceding one, but better worked and much nearer the Solutrean. The Solutrean industry is characterised by pressure flaking often carried out in a most artistic manner. It would, however, be a mistake to assume that no artefact could be of Solutrean age which did not show this artistic flaking, and as a matter of fact this implement can be exactly paralleled with an implement in the Sturge collection in the British Museum, which comes from the typical Solutrean station of "St. Léon-sur-Vezières," La Rochette, Dordogne. (*Plate II., Fig 6.*)

11. The Hammer Stones. These are the implements with which some of the flaking was done. Two examples were shown (a) of Slieve Gallion Granite (b) of Cushendun Quartzite.

This rapid survey of the artefacts found on the site shows how similar it is to the important Grime's Graves site in Norfolk. To make the parallel more complete we may call attention to the antler of the Red Deer which was found by Mr. Bell on Station A at a depth of 4 feet. The Grime's Graves miners used the antlers of the Red Deer as

picks to get out the blocks of flint from the surrounding chalk; over 200 of these picks were discovered in the shafts and galleries which were excavated by the Pre-historic Society of East Anglia. Two of them are figured in their 1914 Report (5), one of them showing on the beam the actual finger-prints of the pre-historic miners who used it. The authors do not suggest that the Red Deer antler was used on the present site as a pick for excavating the flint—our chalk is much too hard for such an implement to be of much service—but its presence is interesting. Unfortunately, the Red Deer has such a long range in geological time that its presence gives no clue to the date of the site.

AGE OF THE SITE: NEOLITHIC VIEW.

This brings us to the crucial question—Can we determine definitely the age to which the site belongs, or, in other words, does the site afford sufficient evidence to justify our belief in the existence of Palaeolithic Man in the North-East of Ireland?

Consider the alternatives. First, we may place the site definitely in Neolithic times. This view disregards entirely the character of the artefacts found on the site, but rests upon two independent lines of thought which buttress it firmly on the geological and historical sides.

The support that the neolithic view receives from the geological standpoint is obvious. The deposit on which the finds have been made is recent, or at any rate post-glacial; it is a simple talus slope, and the implement-bearing layer is nowhere more than four feet thick. There has been no violent re-arranging and re-deposition under conditions different from those which obtained when primitive man was at work there, such as characterise the raised beach sites all round our coasts, and the Larne gravel area in particular; the conditions on the site to-day are the same as they were in the days when the scene was one of pre-historic human activity.

The site has only been subjected to the denuding agencies of wind and weather, the washing out of the finer particles of hill-wash by rain and the gradual renewal of the embankment by blocks of stone falling from the hill-slope above.

Let us consider this point in more detail. When the chalk underlying the basalt is exposed to ordinary denudation agencies the growth of a talus slope is rapid, sometimes very rapid, as we see it to-day in the growth of the taluses in the disused Cave Hill quarries. The chalk rock is easily soluble in rain water, it is readily disintegrated by the action of frost-hammer and the overlying basalt is left without support in, geologically speaking, a very short time. Conditions, of course, are somewhat different once the talus reaches the top of the chalk outcrop; the chalk is then protected to a certain extent and the growth of the talus is then mainly due to the weathering of the basalt.

Now in Station A the chalk outcrop is completely covered by the talus slope, the talus more than reaches the top of the chalk outcrop, and the implement-bearing layer is nowhere more than five feet deep. But Station B is still backed by a chalk escarpment some twenty feet high and the implements are practically confined to the surface layer.

Taking the most favourable case we see that at most the face of the talus slope has only advanced some five feet since it was occupied by man.

The inference is obvious. It cannot have been so very long ago, geologically speaking, since those far-off days. Therefore, it is of neolithic age.

From the historical side, too, this view receives sound support. The site is admittedly a flint implement factory. The great number of discarded flakes and waste cores and the very few complete implements found there prove this to the hilt. This furnishes evidence of a system of organisation within the community which is, at any rate, later than palaeolithic times. There were men who made the implements and men who took them away; those who bought, shall we say, and those who sold. Had human civilisation advanced so far as this before the neolithic age? Or can it be that the culture of palaeolithic man was more varied and complicated than we have hitherto thought possible?

The whole history of human endeavour confirms us in the belief that division of labour, and co-ordination of effort, made their appearance at a very late date in the development of the race, and this argument alone is sufficient to compel our assent to the view that the site under discussion dates back no further than neolithic times.

PALÆOLITHIC HYPOTHESIS.

There remains the second alternative. The site was occupied by a palaeolithic race of flint workers, possibly in Mousterian or early Solutrean times. There is nothing, *a priori*, against this view. Some authorities are of opinion that the mammoth had got over to Ireland before this country was separated from England by an arm of the sea, and we could readily believe that where the mammoth could go palaeolithic man could follow.

Adopting this hypothesis we shall for the present disregard all evidence as to date derived from geological considerations and the history of human development, and pin our faith to the evidence derived from the workmanship of the implements themselves. This evidence, so far as we have been able to interpret it, points straight to palaeolithic man as the occupant of the site in question, with a distinct bias in favour of man of Mousterian or early Solutrean age.

We will review the evidence in detail. Consider first the two flakes which show re-chipping at a later date. These two flakes are, so far as we know, the only two on which re-chipping has been observed. The area must have been thickly strewn with flakes and implements in all stages of manufacture ever since it was first worked over by pre-historic man, but as appears from these two unique specimens it is difficult to find a single piece which has been adapted by a later race for use. Now in most of the sites ascribed to the neolithic age re-chipping is common, and we have a certain amount of negative evidence, the weight of which is difficult to appreciate at its true value, that we are dealing here with a site occupied in palaeolithic times.

The evidence derived from the Tortoise Cores is stronger. The method of flint working which it reveals is just the method which commended itself to Mousterian man, and so far as it goes bears witness to the presence of palaeolithic man in Ireland. The process is a distinct advance on the method of flint working employed by early palaeolithic man; it is of the nature of a labour-saving device, and though wasteful and extravagant that need cause no surprise on a site where flint is so abundant. These Tortoise Cores have been found in the Thames Valley, on the Somme, and in the Grime's Graves excavations, and in regard to their date, writing of the Grime's Graves cores,

Mr. Smith says:—"It is open to anyone to maintain that this method might have been re-invented at any date in the Stone Age, but the fact remains that the type is not ubiquitous; it is in the nature of a novelty and practically confined to a horizon that can be dated;" (6) and that date is 'mid-palaeolithic.

We have further the still stronger evidence afforded by the two leaf-shaped implements, one of which is strictly parallel to an implement found in the Grime's Graves excavations, whilst the other has its counterpart in an implement derived from a typical Solutrean station in the Dordogne. It is difficult to get round dumb witnesses of this kind. If the form, method of working, and type of artefact have no chronological value, if we cannot use our implements as a geologist uses his fossils to date the strata in which he finds them, we shall have to admit that the time and energy spent in classifying the continental industries has been completely wasted, and that our museum collections of type specimens from different cultural horizons are merely so much road metal. And this is not all, for if neolithic man chipped these proto-Solutrean axes, he must have given up for the moment his invariable method of flint working and modelled his style on forms of which he possessed no examples, and of which he had no knowledge. As Mr. Reginald Smith says in closing the Grime's Graves discussion: "The arm of coincidence has not the length required." All the evidence, then, derived from the flakes and implements themselves points to palaeolithic man.

CORRELATION WITH RAISED BEACH SITES.

But the subject cannot be left at this stage. Evidence of the presence of palaeolithic man in Ireland is nothing new to members of the B.N.F.C. It has been produced in any quantity by a number of our field-workers (7). Does this new site of ours throw any light on the subject, and how does this Black Mountain site stand in relation to our other pre-historic sites in the North-East? These pre-historic sites of N.-E. Ireland which have been worked over again and again by members of the Club fall into the following classes:—

- (a) Sites on the 25 feet raised beach such as Larne and Kilroot (8).
- (b) Sites of the sand-hills such as Dundrum and Whitepark Bay (8).
- (c) Factory sites such as the one we are discussing.

Consider for a moment the geological horizon of a typical raised beach site, that of Larne. The Larne gravels lie above the estuarine clay, which in turn rests on the boulder clay. Thus the estuarine clay is post-glacial, and any implements found in a deposit overlying a post-glacial bed in this way are not likely to be of palaeolithic age.

What is the cultural evidence afforded by such a raised beach site? Simply this: that to the number of implements employed by palaeolithic man in different stages of his evolution two new implements have been added, viz.:—the Larne celt, which is nothing more or less than the Campignian pick, and a rude form of the kitchen-midden axe. Professor R. A. S. Macalister accordingly suggests that the Larne flints conform to a definite type and are comparable with the Campignian type of the continent (9). This view commends itself to the authors of this paper, who suggest that the men of the Black Mountain site fall into the same period; later than the palaeolithic and earlier than the full neolithic civilisation which is characterised by the polished stone implements.

That they were more advanced than their palaeolithic predecessors is clear. They still chipped their flints much in the same way as their Mousterian and Solutrean fore-runners, but they had evolved other implements unknown to them, specimens of which have been laid before you. They had not yet learnt the art of polishing their flint implements; that came much later, later even than the invention of pottery; their stage in the scheme of the cultural evolution of the human race seems clear; they had all the accumulated experience of palaeolithic man behind them, but they cannot be classed as a palaeolithic race for they had already taken a step in advance which the men of the old Stone Age never dreamt of; their community was organised on occupational lines, though the full development of all the varied activities of neolithic culture was still in the future.

It is just this evidence of a transition stage between the palaeolithic and neolithic cultures which makes Mr. Bell's discovery so interesting; it is a very definite contribution to our knowledge of the pre-history of the human race at a period when such accessions of knowledge are doubly welcome.

ACKNOWLEDGMENTS.

The authors desire to thank Mr. A. M'I. Cleland (Hon. Sec. B.N.F.C.) for his assistance in photographing the site; Mr. T. E. Osborne, F.R.S.A.I. (Hon. Treas. B.N.F.C), Mr. A. Albert Campbell, F.R.S.A.I., Mr. T. J. Johnston, and Mr. R. J. Welch, M.R.I.A., whose labours have rendered the paper less imperfect than it otherwise would have been; Mr. Hamill, for permission to excavate on his land; Dr. R. F. Scharff, M.R.I.A., F.R.S.A.I. (The National Museum, Dublin), for identification of the animal remains; and Mr. Reginald A. Smith, F.S.A. (Keeper of the Stone Antiquities in the British Museum), for invaluable assistance and advice.

REFERENCES.

- (1) *A Text Book of European Archaeology*, Cambridge, 1921. R. A. S. Macalister. pp. 549 et seq.
- (2) *Report of the Excavations at Grime's Graves, Weeting, Norfolk*. March-May, 1914. p. 163.
- (3) Ditto. Fig. 165. p. 159.
- (4) Ditto. Fig. 77.
- (5) Ditto. Plates XXIII. and XXIV.
- (6) Ditto. p. 164.
- (7) B.N.F.C. Proceedings.
Knowles P.R.I.A. XVI. p. 209.
Rev. F. Smith. *The Stone Ages in Britain and Ireland*. London, 1909.
R. Smith. *Congrèss d'Archeologie prehistorique*. Geneva, 1912. Vol. I. p. 414.
R. Smith. *Archaeologia*. Vol. LXIII. p. 141.
- (8) *The Antrim Raised Beach. A Contribution to the Neolithic History of the North of Ireland*. G. Coffey and R. Ll. Praeger. Proc. Roy. Irish Acad. Vol. XXV. Section C. Nos. 5 & 6. (1904).

(9) R. A. S. Macalister. *Ireland in Pre-Celtic Times*. p. 67.

*Mr. E. F. J. Bennett *Eoliths in Belfast and Bloomsbury*. Geological Magazine. New Series, Decade IV. Vol. X. p. 127.

In this connection see also a paper by Mr. Knowles *Flint Flakes in the Glacial Gravels of Ballyrudder, near Larne, County Antrim*. B.N.F.C. Proc. (2) III. p. 410.

Speaking of these finds at Ballyrudder, Mr. Knowles says:—"If they occurred in other situations I should have no hesitation in describing them as artificially formed flakes; but being found in a glacial formation I feel it right to be cautious and wait for further evidence before speaking of them as worked flints. I prefer to call them flint flakes."

An interesting discussion followed the reading of the paper. Professor Charlesworth emphasised the neolithic aspect of Grime's Graves, with which the discoveries near Belfast were correlated by Mr. Reginald Smith. The presence of pottery, of a certain molluscan and mammalian fauna, the charcoal of beech, deer antler picks, the marks of polished axes in the galleries, and the absence of re-chipping on the flints are all characteristic of the later period. Professor Charlesworth also stressed the importance of keeping in mind in these questions the distribution in space and time of flint implements, and the associated mammalia. He remarked upon the absence of true palaeolithic mammalia, and of palaeolithic flint implements in the country north of Manchester and York, to the west and east respectively of the Pennine Chain, and gave reasons for believing that their absence was due to the occupation of the northern part of Britain by an ice-sheet at that period. Similar evidence, which he hoped to furnish in some detail in the future, rendered it highly improbable that either man or beast could be living in the neighbourhood of Belfast during palaeolithic times. These Belfast flints must, therefore, be referred to the neolithic period, a conclusion borne out by the evidence of Grime's Graves, with which these discoveries were, in his opinion, rightly correlated.

Messrs. Robert Bell, Robert J. Welch, M.R.I.A., and A. P. Hoskins, F.I.C., F.C.S., also spoke.

The paper was fully illustrated by photographs and specimens.

SOME RECENT CLUB EXCURSIONS.

The sixth and concluding ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, 20th March. The President (Rev. W. R. Megaw, B.A.) presided. The programme consisted of an exhibition of 110 lantern slides, contributed by members, for the most part illustrating the summer excursions of the Club. The views were spoken to by Messrs. A. M'I. Cleland, R. J. Welch, M.R.I.A.; S. A. Bennett, B.A., B.Sc.; and J. A. Stendall, M.B.O.U.

CONVERSAZIONE.

The sixty-first Annual Conversazione and Exhibition was held on Tuesday, 10th April, when 154 members and friends assembled in the Carlton Hall, Fountain Street, at 6 p.m.

The exhibits included models of insectivorous plants from the Municipal Museum, and some guillemots' eggs and a white house-sparrow from Mr. J. A. S. Stendall's collection. Mr. T. E. Osborne showed a number of objects from Egypt, as well as photographs of Club excursions. Mr. Robert Bell tabled specimens of his Black Mountain finds, and Mr. W. A. Green exhibited carboniferous fossils, and Mr. A. M'I. Cleland glacial shells. Rev. W. R. Megaw furnished specimens of rare mosses, and Mr. N. Carrothers had an interesting exhibit of plants from Magilligan. Mr. R. J. Welch had quite a variety of objects on view—fresh-water shells from the Lagan Valley and a series of xerophile or sun-loving shells, coloured fashion plates of ladies' dresses in 1863, when the Club was founded; and bookplates by Vinycomb and Carey. Mr. A. Albert Campbell showed some old Belfast newspapers and magazines.

After tea a short business meeting was held, at which several new members were elected.

ANNUAL MEETING.

The Annual Meeting was held in the Museum, College Square N., on Tuesday, 17th April, at 8 p.m., Rev. W. R. Megaw, B.A., President, in the chair.

The Annual Report of the Committee was read by the Honorary Secretary (Mr. A. M'I. Cleland), who moved its adoption, which was seconded by Mr. John Holness, and passed unanimously. The Honorary Treasurer (Mr. T. E. Osborne, F.R.S.A.I.) read his Report and moved its adoption, which was seconded by Dr. Deans, and passed unanimously. In the absence of the Honorary Librarian (Mr. W. M. Crawford, B.A., F.E.S., F.Z.S.) his Report was read by Mr. Osborne, who moved its adoption, which was seconded by Mr. Welch, and passed unanimously. Mr. J. Ronald H. Greeves read and moved the adoption of his Report as Honorary Secretary of the Junior Section, which was seconded by Mr. A. Albert Campbell, F.R.S.A.I., and passed unanimously.

The President then proposed, Mr. Osborne seconded, and it was resolved, and Mr. J. A. Sidney Stendall, M.B.O.U., be elected President for the year 1923-24. Mr. Stendall having taken the chair, the election of the other office-bearers was proceeded with, the following selections being made:—Vice-President, Mr. A. P. Hoskins, F.I.C., F.C.S.; Honorary Secretaries, Mr. A. Albert Campbell, F.R.S.A.I., and Mr. Thomas M. Deans, LL.D.; Honorary Treasurer, Mr. Thomas Edens Osborne, F.R.S.A.I.; Honorary Secretaries of Sections—Mr. Robert Bell (Geology), Mr. Nathaniel Carrothers (Botany), Mr. James Orr (Zoology) Mr. W. A. Green, F.R.S.A.I. (Archaeology), and Mr. J. Ronald H. Greeves (Junior); Ordinary Members of Committee, Rev. W. R. Megaw, B.A., and Messrs. S. A. Bennett, B.A., B.Sc., A. M'I. Cleland, and J. T. Greeves.

The outgoing Honorary Secretary (Mr. A. M'I. Cleland) was thanked for his services to the Club.

Reference was made to the recent deaths of Mr. W. H. Phillips (a foundation member), Mr. Fennell, and Mr. Joseph Wright, all of whom formerly took an active part in the work of the Club. Sympathy was expressed with Mr. W. M. Crawford in the loss of his wife and the serious injuries sustained by himself in the recent railway accident at Dunmurry.

Rev. Robert Workman, M.A. (a foundation member), and Mr. Nevin H. Foster, F.L.S., M.R.I.A., M.B.O.U., were elected Honorary Members.

Mr. Bennett's Report as the Club's delegate to the meeting of the British Association was read, in his absence, by Mr. Cleland.

Two new members were elected.

REPORT OF THE DELEGATE TO THE CONFERENCE
OF DELEGATES OF CORRESPONDING SOCIETIES
OF THE BRITISH ASSOCIATION FOR THE AD-
VANCEMENT OF SCIENCE.

Two Conferences of the Delegates of Corresponding Societies were held at the meeting of the British Association at Hull in September, 1922. The meetings took place in the Council Chamber of the Guildhall, Hull, under the presidency of Mr. W. Whitaker, F.R.S., their object being the discussion of methods by which the advantages of co-operation by Scientific Societies with the British Association and between themselves might be extended and improved.

I had the honour of attending both these meetings as your delegate, and beg to submit my report of the proceedings, so far as they concern the interests of the Belfast Naturalists' Field Club.

With regard to the attempt to induce local Societies to group themselves round district sub-centres—(1) for the interchange of information, and (2) for the more economical publication of the results of research; the constitution and procedure of the Yorkshire Naturalists' Union, that of the Gloucester Association of Science and Arts Societies, and that of the South-Eastern Union of Scientific Societies were described and discussed.

At present the Belfast Naturalists' Field Club is the only Field Club in Ulster of any standing, but should other kindred societies be founded in other centres of population in Northern Ireland it will be both our pleasure and our duty to collaborate with them in all departments of Field Club work. The further question of closer co-operation between Corresponding Societies and the British Association has a certain measure of interest for our Club.

Two of the agenda of the first meeting of the Conference of Delegates were:—

(1) To consider whether the delegates sent to the Conference might be authorised to act as local representatives of the British Association in their respective districts.

(2) To consider in what respects the advantages derived by the Corresponding Societies from their connection with the British Association may be increased or better understood, as for example in regard to:—

- (a) improved facilities for publication.
- (b) help in obtaining lecturers of recognised scientific standing.

After discussion and reference to the Corresponding Societies' Committee, it was resolved at the second meeting of the Conference "To invite the delegates sent to the Conference by the Corresponding Societies to render any assistance in their power in making known in their respective districts the objects and methods of the British Association, and to communicate to the Secretary of the Association the names and addresses of scientific workers and others to whom the preliminary programme of the next British Association meeting should be sent."

This evidently does not go very far, and your representative elicited from the Secretary of the British Association an assurance that in furtherance of a closer co-operation between the Belfast Naturalists' Field Club and the British Association, an application for a lecturer of recognised standing to deliver a lecture at a public meeting in the district, under the auspices of the Club, would meet with favourable consideration, provided that the lecture was advertised as the "British Association Lecture," and provided, further, that financial details could be arranged. This is a matter which the Committee of the Club might consider.

The question of Corresponding Societies paying a subscription to the British Association, and thereby becoming entitled to a copy of the Annual Report, was also discussed, and the Conference of Delegates was informed that in future no delegate is entitled to more than one copy of the report, however many Societies he may represent, but that if any Society desires a copy of the Report it may be supplied at the reduced price of ten shillings.

To treat of the activities of the various sections of the British Association in detail does not lie within my province, but I should like to draw the attention of my fellow-members to the following addresses and discussions of Field Club interest:—

(1) A discussion on *The Geological History of the North Sea Basin*, opened by Professor P. F. Kendall, M.Sc., F.G.S., the President of Section C (Geology).

(2) A joint discussion of Section C (Geology) with Section E (Geography) and Section H (Anthropology) on *The Relation of Early Man to the Phases of the Ice Age in Britain*, opened by Mr. H. J. E. Peake, the President of Section H. (Anthropology).

(3) A joint discussion of Sections D (Zoology) and K (Botany) on *The Present Position of Darwinism*, which was opened by Dr. J. C. Willis, F.R.S., with a paper on *The Inadequacy of the Theory of Natural Selection as an Explanation of Geographical Distribution and Evolution*.

An account of these papers will be found in the Annual Report of the British Association.

I cannot conclude my Report to the Club without calling attention to the magnificent series of exhibits of local interest which were tabled by the Yorkshire Naturalists' Union in the Hull Museum. From the mass of material which bore such eloquent testimony to the activities of the Yorkshire Field Clubs, I select the following list of exhibits to show the Club what has already been done for Yorkshire, in the hope that one day the same, or something even better, may be done for Ulster.

(1) Photographs of all the Yorkshire Birds, the Summer and Winter visitors arranged in sequence of arrival.

(2) Exhibit illustrating the variability and structure of the Mollusca of the County.

(3) The North Yorkshire Coleoptera.

(4) The "Cuckoo" Humble-bees and their Hosts.

(5) The Diptera of Spurn Point.

(6) The Woodlice of Yorkshire.

(7) The Melanic Lepidoptera.

(8) The Harvestmen, False Scorpions and Mites of Yorkshire.

(9) A magnificent series of Maps illustrating a Regional Survey of the Huddersfield District.

(10) Botanical Survey Maps of the West Riding and N.E. Yorkshire.

(11) A fine collection of interesting Yorkshire Plants.

(12) An Exhibit of Plant Galls, some of economic importance, and others illustrating special points.

(13) The Mosses of an Oakwood on the Millstone Grit, of the West Riding streams, and of an industrial city.

(14) Various exhibits of Fungi.

To a field naturalist this exhibition was the outstanding feature of the 1922 Meeting of the British Association.

(Signed) S. A. BENNETT, B.A. (Cantab.)
B.Sc. (London).



RULES

OF THE

Belfast Naturalists' Field Club

As amended at Annual Meeting held 25th April, 1922.

I.

That the Society be called "THE BELFAST NATURALISTS' FIELD CLUB."

II.

That the object of this Society be the practical study of Natural Science and Archæology in Ireland.

III.

That the Club shall consist of Ordinary, Junior, Life, Corresponding and Honorary Members. The Ordinary Members shall be proposed and seconded at any ordinary meeting of the Club, and such members may be elected at the next ordinary meeting following, by a majority of votes, provided that in the meantime the first Annual Subscription has been paid. They shall pay annually a subscription of Five Shillings. Members who are twelve months in arrear in their subscriptions shall not receive any further circulars or other printed matter.

That the composition fee for Life Membership be Four Guineas.

Junior Members, who must be between the ages of 12 and 21, shall be elected in the same way as Ordinary Members, but shall pay annually a subscription of One Shilling (1/-) from 12 years of age to 18, and a subscription of Two Shillings and Sixpence (2/6) from 18 years of age to 21. Junior Members shall not receive any printed matter except the usual notices; shall not have the power to vote; and shall not borrow books from the Club's Library without special permission from the Librarian. On attaining their majority they shall become Ordinary Members, and shall pay an annual subscription of Five Shillings (5/-).

IV.

That the Honorary and Corresponding Members shall consist of persons of eminence in Natural Science, or who shall have done some special service to the Club; that such Members may be nominated by any Member of the Club and on being approved by the Committee, may be elected at any subsequent Meeting of the Club by a majority of the votes of the Members present. That not more than two Honorary Members be elected in any one year. That Corresponding Members be expected to communicate a paper once within every two years.

V.

That the Officers of the Club be annually elected and consist of a President Vice-President, Treasurer, Librarian, and one or two Secretaries, together with the Secretaries of the various Sections of the Club. That the office of President or that of Vice-President shall not be held by the same person for more than two years in succession.

VI.

That the General Committee shall consist of the above-named officers with nine ordinary members of Committee, and shall hold at least eight meetings during the year; five persons to form a quorum.

That three ordinary members of Committee shall retire annually in order of seniority, those retiring being ineligible for re-election for one year. Should any ordinary member of Committee fail to attend at least three of the Committee meetings held during the year his or her place may be considered vacant and another member elected to fill the position. No ordinary member of Committee shall hold the post of Secretary in any of the Sections. That in the event of a vacancy occurring in the General Committee a new member may be co-opted to fill such vacancy for the remainder of the year.

That nominations for ordinary members of Committee shall be sent in writing to the Secretaries on or before the 21st day of March in each year. That the privilege of nominating members of Committee shall be held by all Ordinary and Life Members of the Club. That the names of those members so nominated shall be published on the circular convening the Annual Meeting, at which the Ordinary Members of Committee shall be elected by ballot. That should the necessity arise the retiring members of Committee shall be balloted for.

VII.

The Committee may from year to year appoint Sectional Secretaries and Committees, as may be considered desirable, to further original investigations in any one or more departments of the Club's work. No financial responsibility to be incurred by any Sectional Secretary, Sectional Committee, or any Officer of the Club without the previous approval of the Club's Committee. The Junior Section to have a Committee composed of Six Members of the Club, the Chairman to be annually appointed by the General Committee.

VIII.

That the members of the Club shall hold at least Six Field Meetings during the year, in the most interesting localities, for investigating the Natural History and Archæology of Ireland. That the place of meeting be fixed by the Committee, and that five days' notice of each Excursion be communicated to Members by the Secretaries. That each of the Sectional Secretaries shall be made responsible for the running of one Regular Excursion, the programme to provide study in the subject appertaining to the Section, and that any additional Special Excursions shall be arranged by the Secretaries of the Sections concerned.

IX.

That regular Monthly Meetings be held during the Winter Session from November till April, inclusive, for the purpose of reading Papers; such Papers as far as possible to be original, and to treat of the Natural History and Archæology of the district. That the Papers to be read be secured by a Standing Organising Committee, consisting of the Hon. Secs. of the Club, together with the Sectional Secretaries and a Chairman. That between the Regular Monthly Meetings of the Club Special Meetings open to all Members of the Club may be held, at which Papers of specialised interest would be discussed. That the Sectional Secretaries shall each be responsible for the providing of a programme for one Regular and one Special Meeting, one Regular and one Special Meeting to be arranged by the Hon. Secs. Any extra Meetings shall be arranged by the Organising Committee, if desired. That the programme for the Winter Session shall be completed by the date of its First Meeting and issued to all Members. That each notification announcing a Regular Meeting or Excursion shall also serve to notify Members of the next Special Meeting or Excursion.

X.

That the Committee shall, if they find it advisable, offer for competition Prizes for the best collections of scientific objects of the district; and the Committee may order the purchase of maps, or other scientific apparatus, and may carry on geological and archæological searches or excavations, if deemed advisable, provided that the entire amount expended under this rule does not exceed the sum of £10 in any one year.

That the General Committee may offer from time to time such prize or prizes as they may deem desirable for competition among Schools in or near Belfast.

XI.

That the Annual Meeting be held during the month of April, when the Report of the Committee for the past year, and the Treasurer's Financial Statement shall be presented, the Committee and Officers elected, Bye-laws made and altered, and any proposed alterations in the general laws, of which a fortnight's notice shall have been given, in writing, to the Secretary or Secretaries, considered and decided upon. The Secretaries to give the Members due notice of each intended alteration.

XII.

Members of other Irish Field Clubs, residing temporarily or permanently in or near Belfast, may be enrolled as Members of the Club without election or entrance fee on production of a voucher of membership of another Club, and without subscription for the current year, on production of a receipt showing that such subscription has been paid to another Club. Failing the production of such receipt, the usual subscription for the current year to be paid to the Treasurer on enrolment. The names of Members so admitted to the Club to be published with the notice of meeting following the date of their enrolment

XIII.

That, on the written requisition of twenty-five members, delivered to the Secretaries, an Extraordinary General Meeting may be called, to consider and decide upon the subject mentioned in such written requisition.

XIV.

That the Committee may be empowered to exchange publications and reports, and to extend the privilege of attending the Meetings and Excursions of the Belfast Naturalists' Field Club to Members of kindred societies, on similar privileges being accorded to its Members by such other societies.

RULES FOR THE CONDUCTING OF EXCURSIONS.

I. The excursion to be open to all Members, each one to have the Privilege of introducing two friends. The time for commencing as many as possible of the Half-Day Summer Excursions to be not prior to 2 p.m.

II. A Chairman to be elected as at ordinary meetings.

III. One of the Secretaries to act as Conductor, or, in the absence of both, a Member to be elected for that purpose.

IV. No change to be made in the programme, or extra expense incurred, except by the consent of the majority of the Members present.

V. No fees, gratuities, or other expenses to be paid except through the Conductor.

VI. Every Member or Visitor to have the accommodation assigned by the Conductor. Where accommodation is limited, consideration will be given to priority of application.

VII. Accommodation cannot be promised unless tickets are obtained before the time mentioned in the special circular.

VIII. Those who attend an excursion without previous notice will be liable to extra charge, if extra cost is incurred thereby.

IX. No intoxicating liquors to be provided at the expense of the Club.

Exchanges of Proceedings, 1922-23.

Belfast—Natural History and Philosophical Society.

Report and Proceedings for 1919-20 and 1920-21.

Birmingham—Natural History and Philosophical Society.

Proceedings, Vol. XV., Part 1, (and Supplement), List of Members (1919), and Annual Report (1920)

Bournemouth—Natural Science Society.

Vol. XIII (1920-21).

Brighton and Hove—Natural History and Philosophical Society.

Report for 2 years ending July, 1922.

Bristol—Naturalists' Society.

Proceedings, 4th Series, Vol. V., Part 4.

Cardiff—Naturalists' Society.

Transactions, Vol. LII. (1919).

Chester—Society of Natural Science, Literature and Art.

Annual Report No. 51 (1921-22).

Dublin—Royal Irish Academy.

Proceedings, Vol. XXXV. Title Pages and Indices B and C.

Vol. XXXVI. Sec. B. No. 1., Sec. C. Nos. 1 to 5.

Dublin—Royal Society of Antiquaries of Ireland.

Journal, Vol. LII.

Essex—Field Club.

Essex Naturalist, Vol. XX., Nos. 2 and

Leyden—Rijks Ethnographisch Museum.

Report for 1920-21.

Liverpool—Geological Society.

Vol. XIII., Part 3 (1921-22).

London—Geologists' Association.

Proceedings, Vol. XXXIII., Parts 3 and 4; Vol. XXXIV.,
Part 1.

„ Linnean Society.

Proceedings for 1921-22.

List of Members for 1922-23.

Manchester—Microscopical Society.

Annual Report for 1921.

Marlborough College—Natural History Society.

Report No. 71 (1922).

North Staffordshire—Field Club.

Transactions and Annual Report. Vols. LIV., LV. and LVI.

Oxford—Ashmolean Natural History Society.

Report for 1922.

Perthshire—Society of Natural Science.

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Toronto—Royal Canadian Institute.

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Western North America, Vol. I, Lizards; Vol. II, Snakes
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,, Chicago—Field Museum of Natural History.

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,, Cincinnati—Lloyd's Library.

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,, Milwaukee, City of—Public Museum.

Year Book, 1921.

,, Missouri—Botanical Garden.

Bulletin, Vol. X., Nos. 4 to 10; Vol. XI., Nos. 1, 2, 3.

Philadelphia—Academy of Natural Sciences.

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Parts 2 and 3; Vol. LXXIV (1922).

,, Rochester, N.Y.—Academy of Science.

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,, Staten Island, N.Y.—Institute of Arts and Sciences

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Mass.—Tuft's College.

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3 (Scientific Series, No. 42).

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Bulletins, 707, 708, 722, 724, 725, 726 (G. and Index) 727, 728, 730.

(A to D), 731, 733, 735 (C to H) 736 (A to G), 742.

Water Supply Papers: 463, 473, 477, 478, 479, 482, 484, 486, 490
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Professional Papers: 122, 124, 128 (D, E), 129 (C to I), 130, 131
(A to L).

Mineral Resources: 1917, Part II. Index.

„ „ 1918, Part I. Index.

„ „ 1919, Part I., 29; Part II., Introduction to
Parts I. and II.

„ „ 1920, Part I., Nos. 23 to 30; Part II., 27 to 35.

„ „ 1921, Part I., Preliminary Summary; Nos. 1
to 23, 26, Part II., Nos. 1 to 28, 30.

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„ Washington—Government Printing Works.

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„ National Museum.

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„ Wisconsin—Academy of Sciences, Arts and Letters.

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Charles Janet

Le Volvox (1922). *Considérations sur l'être vivant*, III.

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LIST OF MEMBERS.

For the year ending 31st March, 1923.

**Any Change in the Address of Members should be at once notified
to the Secretaries by Postcard.**

The Dates prefixed to Members' names signify date of Election.

"O" stands for an Original Member who signed the requisition
for the formation of the Club in 1863.

Hon. Members.

1914. Charlesworth, Professor John K., D.Sc., Ph.D., F.G.S., Queen's
University, Belfast.
O Donaldson, George, 1, Prospect Street.
1899. Foster, Nevin H., F.L.S., M.R.I.A., M.B.O.U., Hillsborough,
Co. Down.
1866. Swanston, W., F.G.S., Farm Hill, Dunmurry.
1902. Scharff, Robert F., B.Sc., Ph.D., F.L.S., M.R.I.A.,
F.R.S.A.I., Knockranny, Bray, Co. Wicklow.
1922. Vinycomb, John, M.R.I.A., F.R.S.A.I., 59 Thornton Avenue,
Streatham, London, S.W.
1880. Welch, R. J., M.Sc., M.R.I.A., 49 Lonsdale Street.
O Workman, Rev. R., M.A., Crusheen, Cadogan Park.

Corresponding Member:

- O Holden, J. S., M.D., Sudbury, Suffolk.

Life Members.

1903. Stelfox, A. W., A.R.I.B.A., M.R.I.A., 14 Clareville Road,
Rathgar, Dublin.
1893. Wilson, Alec G., J.P., M.R.I.A., Croglin, Ballyaughlis.

Ordinary Members.

1921. Adams, John, Auburn, Cranmore Park.
1907. Adams, Rev. W. A., B.A., The Manse, Antrim.
1922. Adamson, J. H., 70 Malone Avenue.
1922. Agnew, Mrs. W. H., 136 Fitzroy Avenue.
1915. Aird, Hugh, 10 King Street.
1917. Alderdice, R. Sinclair, F.C.I.B., 12a Linenhall Street.
1922. Alexander, K. M., 30 Kelvin Parade.
1921. Alexander, Miss M., Summer Hill, Stranmillis.
1911. Anderson, Mrs. D'Arcy, Ballyhossett House, Downpatrick.
1911. Anderson, Miss Sarah M., 4 Church View, Holywood.
1882. Andrew, J. J., L.D.S., R.C.S. (Eng.), 23 University Square.
1892. Andrews, Miss E., 10 Park Crescent, Tonbridge, Kent.

1912. Andrews, Miss E. L., Inla, Comber.
 1922. Andrews, J. D., Araghmore, Comber.
 1911. Andrews, Miss M. A., 50 Eglantine Avenue.
 1912. Andrews, Dr. Marion B., D.P.H., Orsett, Derryvolgie Avenue.
 1913. Andrews, Michael C., F.R.G.S., F.R.S.G.S., do.
 1921. Ardis, R., A.M.I.E.E., 6 Marine Parade, Holywood.
 1921. Ardis, Harold, 6 Marine Parade, Holywood.
 1916. Armstrong, Miss Dorothy, M.Sc., Corlea, Somerton Road.
 1915. Armstrong, Edward A., B.A., do.
 1922. Armstrong, John, Gt. Northern Railway, Crumlin.
 1921. Ashworth, Rev. A. O., Marsdene, Cyprus Park, Bloomfield.
 1921. Ashworth, Mrs. do.

 1916. Baillie, Robert, Elleslie, Ravenhill Park.
 1907. Baillie, W. T., 26 Green Road, Knock.
 1922. Baird, Sir R. H. H., K.B.E., D.L., Park Lodge, Antrim Road.
 1922. Baird, Thos. D., Mayfair, Arthur Square.
 1922. Bass, Capt. R. T., M.A., Ph.D., Claudy, Co. Derry
 1921. Beaumont, Ivor, A.R.C.A., M.S.A., F.R.S.A., F.I.B.D.,
 Municipal College of Technology.
 1905. Beck, Miss, 1 Derryvolgie Avenue.
 1913. Bell, D. M., Carragh Ard Lodge, Newcastle, Co. Down.
 1896. Bell, E. George, Solitude, Lurgan.
 1922. Bell, John, 10 Garfield Street.
 1893. Bell, Robert, 64 Newington Avenue.
 1921. Bell, Miss Emma, Cressington, Rosetta Park.
 1908. Bennett, S. A., B.A., B.Sc., Campbell College, Belmont.
 1922. Berringer, Joseph, 36 North Street.
 1884. Bigger, F. J., M.R.I.A., F.R.S.A.I., Ardrigh, Antrim Road.
 1914. Bird, Miss, 18 Connaught Mansions, Prince of Wales Road.
 Battersea Park, London, S.11.
 1916. Black, S. C., 15 College Gardens.
 1893. Blackwood, Miss Sarah, 6 College Green.
 1922. Blackwood, Reginald W. H., J.P., 24 University Square.
 1921. Blair, Mrs. J., 14 Cliftonville Avenue.
 1922. Blake-Whelan, C., Barna, Osborne Park.
 1921. Bloom, H. M., The Hermitage, Marino.
 1921. Bowman, Miss A., 1 Rossmore Avenue.
 1922. Bowman, Robert, 2 Osborne Drive, Bangor.
 1893. Boyd, Miss E. S., 5 Brock Terrace, The Grange, Guernsey.
 1922. Boyd, J. St. Clair, Chatsworth, University Road.
 1894. Boyd, W. C., J.P., Thornhill, Farnham Road, Bangor.
 1922. Boyd, Dr., Victoria Street, Ballymoney.
 1917. Bradley, Mrs., Haypark House, Knock.
 1916. Bradley, Miss L. I., Haypark House, Knock.
 1921. Brand, W. J., 18 Ashley Gardens.
 1883. Brandon, Hugh B., J.P., 2 Wellington Place.
 1863. Brett, Sir Charles H., I.L.D., Grettton Villa South, Belfast
 1921. Brierley, J. C. A., M.Sc., 224 Cliftonville Road.
 1921. Brown, Archibald, 12 Donegall Square West.
 1922. Brown, James R., 80 Marlborough Park Central.
 1923. Brown, W. P., I.L.B., 34 Alliance Avenue.
 1923. Brown, Mrs. do.
 1883. Brown, Thomas, J.P., 102 Donegall Street.
 1876. Bulla, Charles, 272 Lisburn Road.

1921. Burden, S. H., 8 Alfred Street
 1899. Burrowes, W. B., F.R.S.A.I., Ballynafeigh House.
 1911. Brown, J. B. M., 356 Ormeau Road.
 1920. Broughton, E., 58 Hopefield Avenue.
 1922. Bullick, E., Railway Street, Lisburn.
1921. Camac, Dr. J., 99 Swadlincote Road, Woodville, near Burton-on-Trent.
1903. Campbell, D. C., J.P., Templemore Park, Londonderry.
 1921. Campbell, Francis, 99 Osborne Park.
 1909. Campbell, John, Albert Brickworks, Carrickfergus.
 1917. Campbell, James, Jennymount Mill.
 1921. Campbell, A. Albert, F.R.S.A.I., Drumnaferrie, Rosetta Park
 1921. Campbell, Mrs. A. Albert, Drumnaferrie, Rosetta Park.
 1921. Campbell, Mrs. 20 Wellington Park Avenue.
 1891. Capper, J. Malcolm, 14 Linenhall Street.
 1914. Carter, Charles S., 25 Donegall Street.
 1922. Carey, Miss Mary, Brugh, Knockdene Park.
 1921. Carley, W. J., Aughendunvanen, Dromore.
 1904. Carmody, Rev. Canon W. P., M.A., Lisburn.
 1892. Carrothers, Nathaniel, 145 Stranmillis Road.
 1923. Carrothers, E. N., Midland Railway, York Road.
 1892. Carson, J. C., 8 Wellington Place.
 1922. Cassidy, Wm., 6 Bawnmore Road.
 1907. Chambers, W., 35 Cranmore Avenue.
 1920. Chandler, W. P., 1 Ailsa Terrace, Strandtown.
 1920. Chandler, Mrs. do.
 1919. Chase, Capt. C. D., M.C., M.A., Campbell College, Belmont
 1922. Cheater, Wm., 33 Glenbrook Avenue.
 1921. Cheyne, S. Donald, J.P., 11 Donegall Place.
 1901. Cheyne, H. H., Roseneath, Bangor.
 1922. Christy, Wm., 3 Edenderry Gardens, Tennent Street.
 1920. Churchill, Miss, Inverary, Sydenham.
 1922. Clarke, George W., 39 Adelaide Park.
 1922. Clarke, John, Antrim Arms Hotel, Glenarm.
 1894. Cleland, Alex. M'I., 28 Green Road, Knock.
 1894. Cleland, Mrs. Annie, 28 Green Road, Knock.
 1890. Cleland, James A., Brooklyn, Holywood.
 1917. Close, R. M., M.R.I.A., 13 Donegall Square North.
 1921. Coey, Henry, Midland Railway Co. (N.C.C.) Terminus, York Road.
1922. Cole, Francis J., Ardmara, Greenisland.
 1922. Corry, Hon. Cecil, Castle Coole, Enniskillen.
 1921. Cousins, D., 4 Frederick Terrace, Malone Road.
 1906. Cowie, James, Cushlewa, Jordanstown.
 1921. Crawford, W. M., B.A., F.E.S., F.Z.S., Orissa, Marlborough Park.
1921. Crawford, Lieut.-Col. F. H., C.B.E., Cloreen, University Road.
 1922. Cromie, A. G., Ulster Bank, Carlisle Circus.
 1922. Cromie, Miss Maude, do.
 1922. Crothers, Miss, 7 Easton Crescent, Cliftonville Road.
 1921. Crymble, Mrs. S., 18 College Green.
 1913. Cunningham, Miss M. E., F.R.S.A.I., Glencairn.
 1884. Cunningham, Rt. Hon. Samuel, Fernhill.

1915. Cunningham, Josias, R.N.V.R., M.B.O.U., Fernhill.
 1922. Currie, G. B. H., The Manse, Bangor.
 1921. Curry, Wm., 5 Oakland Avenue, Bloomfield.
 1921. Cuthbert, Rev. A., M.A., Rocklands Manse, Carrickfergus.
1923. Dales, Miss M., 14 Easton Crescent.
 1923. Dalzell, John, 12 Derlitt Street, Ballynafeigh.
 1922. Davies, Miss Dorothy, 2 University Street.
 1922. Davies, James J., Botanic Gardens Park.
 1921. Davison, A. H., F.A.I., 32 Wellington Place.
 1921. Deane, Arthur, M.R.I.A., F.R.S.E., Art Gallery and Museum, Belfast.
1919. Deans, T. M., LL.D., Academy House, Rosetta.
 1891. D'Evelyn, A. M., M.D., Ballymena.
 1915. Dick, Miss Mary E., M.A., 8 Wellington Park.
 1921. Dinsmore, J. A. S., 28 and 30 Castle Place.
 1921. Dobbin, W. C., Eastnor, Somerton Road.
 1921. Dobbin, Mrs. W. C., Eastnor, Somerton Road.
 1922. Dobbin, Miss, 60 University Street.
 1921. Doggart, Henry, 24 Canterbury Street.
 1921. Donaldson, Dixon, Dunoon, Islandmagee, Co Antrim.
 1922. Donaldson, James, 149 Castlereagh Road.
 1922. Douglas, John, Helen's Bay.
 1922. Dowlin, J. T., Kildornan, Donegall Park Avenue.
 1922. Downer, W. H. W., Arlington House, Cavehill Road.
 1908. Duncan, W., 54 Textile Buildings, Donegall Square South.
 1921. Dunwoody, W. J., 10 Marine Parade, Holywood.
 1909. Dwerryhouse, Major A. R., D.Sc., F.G.S., M.R.I.A., University College, Reading.
1921. Earls, Professor, J., B.A., 31 Ravenhill Park.
 1921. Earls, Miss Annie, Rosetta National School, Belfast.
 1916. Edwards, Mrs. 54 Ulsterville Avenue.
 1884. Elliott, David, B.A., J.P., Ardree, Bloomfield.
 1923. Ewart, Lavens M., The Banks, Ballyholme, Bangor.
1868. Faren, W., F.R.S.A.I., 11 Mountcharles.
 1921. Farrell, George, 1 Mount View, Lower Windsor Avenue.
 1912. Ferguson, Mrs., St. Helen's, Holland Park, Knock.
 1913. Ferguson, Samuel, St. Helen's, Holland Park, Knock.
 1918. Fiddes, H., 20 Wilmont Terrace, Lisburn Road.
 1921. Finlay, W. J., Haslar, Galwally, Belfast.
 1897. Finlay, Miss A. M., 3 Old Nichol Street, Bethnal Green, London, E.S.
1906. Finlay, Arch. H., A.C.G.I., A.I.E.E., Willesden, Holywood.
 1921. Fleet, Capt. H. G., Municipal College of Technology.
 1903. Foster, Mrs. N. H., Hillsborough.
 1911. Foster, Miss A. B., B.Sc., Y.W.C.A., William Street, Waterford.
 1923. Foster, Mr. A. R., B.A., Principal, Royal Academy, Cliftonville.
 1921. Freeland, Samuel, 23 Meadowbank Street.
 1892. Fulton, David, Arlington, Windsor Avenue.
 1921. Fulton, Wm., 44 Wellington Place.

1904. Gaffikin, William, J.P., Notting Hill.
 1922. Gallagher, J., 8 Rosevale Street.
 1891. Galloway, Joseph, 50 Eglantine Avenue.
 1922. Gallway, W. H., Shielavon, Ranfurly Avenue, Bangor.
 1892. Gamble, Miss, Lorne, Craigavad.
 1916. George, A. H., 22 Thorndale Avenue.
 1917. Gibson, Mrs. Bonnington, Lansdowne Road.
 1911. Gibson, Mrs. Joseph, Hollow Bridge House, Hillsborough, Co. Down.
 1921. Gibson, Wm. J., Montpelier House, Malone Road.
 1921. Gibson, R. H., M.R.I.A., 5 West Elmwood.
 1921. Gibson, Samuel, J.P., Summer Hill, Dunmurry.
 1921. Gilliland, J. H., 33 Gresham Street.
 1921. Gilliland, W. T., B.Sc., 7 Wellington Place.
 1921. Glendinning, R. G., Jun., Lennoxvale.
 1905. Glover, James, The Glebe, Kirkcubbin, Co. Down.
 1922. Gordon, C. E., 35 Rosemary Street.
 1918. Gordon, Eustace, 35 Rosemary Street.
 1921. Gore, W., F.R.S.A.I., Municipal College of Technology.
 1921. Graham, Thomas, 26 Alexandra Avenue.
 1922. Graham, David, Langford Lodge, Crumlin.
 1922. Graham, Miss M. E., 241 Sundridge Terrace, Mountpottinger.
 1891. Green, Mrs. Isaac, Hawthornden, Knock.
 1895. Green, W. A., F.R.S.A.I., 4 Salisbury Terrace, Chichester Park.
 1921. Green, H. P., Limehurst, Holland Park, Knock.
 1922. Greenfield, Miss, 1 Edenvale, Larne.
 1920. Greenham, Miss J. C., 44 Orient Gardens.
 1901. Greeves, J. Theodore, Nendrum, Knockdene Park.
 1917. Greeves, J. R. H., B.Sc., Altona, Strandtown.
 1901. Greeves, W. Leopold, Ormeau Avenue.
 1901. Greeves, Fergus M., Garranard, Sydenham.
 1918. Greeves, O. V., Tavanagh House, Portadown.
 1922. Gumley, Rev. E. M., B.A., B.D., Mount Druid, Ballintoy.
 1908. Hadden, Mrs., Magharee, Portadown.
 1922. Haig, J. M., Mertoun, Knock.
 1920. Hale, W. Bancroft, 6 Salisbury Gardens.
 1921. Hall, Henry, 177 Snugville Street.
 1922. Hall, T. J., 37 University Street.
 1922. Halliday, Wm., 264 Ravenhill Avenue.
 1883. Hamilton, Rt. Hon. and Rev. T., D.D., LL.D., Queen's University.
 1908. Hamilton, Miss, 5 Church Avenue, Holywood.
 1921. Hamilton, Wm., 32 Silvio Street.
 1920. Harbinson, Wm. Highbury, North Road.
 1916. Harper, V. M., B.A., Campbell College, Belmont.
 1920. Haslett, W., Model School, Belfast.
 1921. Haslett, F. W., 1 Ulster Terrace, Lisburn Road.
 1921. Hayward, H. Richard, Hopefield House, Antrim Road.
 1921. Heenan, Miss J., 11a Stranmillis Road.
 1908. Henry, F. W., Ye Olde Castle, Castle Place.
 1915. Herdman, Miss E. W., Fountainville, University Road.
 1876. Heron, F. Adens, D.L., J.P., F.R.S.A.I., Maryfield, Holywood.
 1922. Heron, Mrs., Maryfield, Holywood
 1922. Heron, Miss E. do.

1922. Heron, Rev. W. S., Clonduff, Rathfriland.
 1922. Heron, Miss, Teagheen, Evelyn Gardens, Antrim Road.
 1921. Hawton, J., M.P.S.I., 315 Ormeau Road.
 1922. Hill, Dr. S. W., 46 Pound Street, Larne.
 1905. Hobson, Mrs. Aitennach, Crawfordsburn, Co. Down.
 1921. Hoffman, F., Leamington, 7 Old Cavehill Road.
 1895. Hogg, A. R., 10 Thorndale Avenue.
 1908. Hogg, D. J., 16 Kansas Avenue.
 1922. Hogg, Lieut. H. B. Johnstone, R.E., Underhill, Greenisland.
 1903. Holland, Miss, Highbury, Cadogan Park.
 1904. Holland, Frank J., Fairyhill, Osborne Gardens.
 1921. Holness, John J., 26 Ava Street.
 1906. Hopkirk, F. G., Midland Railway Co. (N.C.C.).
 1919. Horsbrugh, C. B., Blessington House, Hillsborough, Co. Down.
 1921. Hoskins, Miss M., 14 Rosetta Park.
 1921. Hoskins, A. P., F.I.C., F.C.S., 14 Rosetta Park.
 1911. Houston, Miss, Lisheen, Sans Souci Park.
 1914. Houston, James Dick, Northern Bank House, Kilrea, Co. Derry.
 1921. Houston, H. S., Slievmarra, Jordanstown, Co. Antrim.
 1922. Hunter, Dr. J. A., 6 Stranmillis Road.

 1921. Ireland, J. Herbert, 107 South Parade.

 1892. Jaffé, Lady, 3 Upper Phillimore Gardens, Kensington, London, W.8.
 1909. Jenkins, W. A., 6 Elmwood Terrace.
 1914. Jenkinson, Henry, 29 Rosemary Street.
 1901. Johnson, Rev. W. F., M.A., F.E.S., M.R.I.A., 4 Killowen Terrace, Rostrevor.
 1906. Johnston, F. W., The Cottage, Cultra.
 1916. Johnston, Miss M. B., Beechville, Glenburn Park.
 1921. Johnston, E. C., F.R.S.A.I., Glenmount, Newtownards.
 1922. Johnston, Miss Minnie E., 25 Lonsdale Street.
 1922. Johnston, T. J., 15 Westland Gardens.
 1921. Jones, H. H., 4 Donegall Square N.

 1916. Kay, Miss M. P., B.Sc., Burnside, Bangor.
 1917. Keiller, W., 11 Chichester Street.
 1922. Keith, S. S., 20 Knutsford Drive, Cliftonville.
 1918. Kennedy, David, Pembroke, Wandsworth Road, Knock.
 1921. Kennedy, Captain E. R., A.R.I.B.A., M.R.San.I., The Bungalow, Sandown Road, Knock.
 1921. Kennedy, R. N., J.P., Avonmore Lodge, Balmoral.
 1921. Kernohan, J. W., M.A., Seaforde, Park Road.
 1922. Kerr, Charles E., B.A., Mount Carmel, Upper Newtownards Rd.
 1921. Kidd, James, 44 Brookvale Avenue.
 1899. Killen, William, 3a Dudley Chambers, 20 Waring Street.
 1922. King, Mrs. J., Castle Chester, Whitehead.
 1922. Kinkead, Geo. W., Cushendun, Co. Antrim.
 1922. Kirk, William, 46 Upper Ann Street.
 1886. Kirkpatrick, F., 27 Oxford Street.
 1868. Knowles, W. J., M.R.I.A., F.R.S.A.I., Flixton Place South, Ballymena.
 1922. Knox, C. J., 9 Donegall Square S
 1877. Kyle, R. A., 17 Wellington Park.

1921. Lane, F. W., C.E., 79 Portallo Street.
1901. Larmour, H. G., J.P., Lisburn.
1920. Lavery, W. H., Glenwood, Bloomfield Road.
1921. Lawther, Miss J., 13 James Street, Leek., Staffs.
1912. Ledgerwood, N. J., J.P., 10 Wellington Park.
1921. Lees, Miss S. L., Drumadoon, Castle Park.
1922. Leetch, Miss Elizabeth, Cullybackey, Co. Antrim.
1922. Leonard, W. B., Railway Street, Lisburn.
1920. Lepper, R. S., M.A., LL.M., F.R.Hist.S., F.R.S.A.I., Elsinore, Crawfordsburn.
1899. Lindsay, Professor J. A., M.D., M.A., F.R.C.P., 3 Queen's Elms.
1915. Lindsay, Mrs., c/o Ulster Bank, Markets Branch, Belfast.
1921. Lindsay, A. G., Northern Bank House, Holywood.
1922. Logan, James, M.A., F.R.G.S., Greystone, Ravenhill Park.
1921. Loudon, J. B., 28 Salisbury Avenue, Antrim Road.
1921. Loughridge, James, 173 Cliftonville Road.
1918. Lowry, Miss, Hazelwood, Bloomfield.
1918. Lewis, Mrs. A. J., 2 Ranfurly Drive, Bloomfield.
1893. Lowry, D. E., Oakley, Strandtown.
1908. Lowry, James, Llewellyn Avenue, Lisburn.
1910. Lowry, Miss L., Hazelwood, Bloomfield.
1917. Lyttle, James, 1 Olney Terrace, Ballygomartin Road.
1922. MacCulloch, Miss Charlotte M., Ballyarton, Killaloo, Londonderry.
1921. Mackenzie, W. G., A.R.H.A., The Studio, Clarence Place.
1915. Maconachie, Rev. D. H., B.A., B.D., The Manse, Holywood.
1915. Maconachie, Mrs., The Manse, Holywood.
1905. Macoun, Mrs. S. M., Clanrolla, Windsor Park.
1912. Macoun, S. M., do.
1922. Magill, Hugh, 217 Cavehill Road.
1920. Magowan, A., 2 Easton Crescent.
1921. Magowan, Mrs., 2 Easton Crescent.
1876. Major, Rev. J. J., Doagh, Co. Antrim.
1905. Malcolm, Miss Susan, Downshire Road, Holywood.
1921. Malcolm, Bowman, M.I.C.E., M.I.Mech.E., Inver, Ashley Park.
1899. Malcolmson, J. G. B., Cairnbourn, Strandtown.
1901. Malcolmson, Herbert T., M.B.O.U., 32 Arthur Street.
1901. Malcolmson, Joseph, 32 Arthur Street.
1914. Manning, J. W., Slieve Donard Hotel, Newcastle.
1880. Marsh, Mrs. Glenlyon, Holywood.
1922. Marshall, Rev. R. L., M.A., LL.D., Maghera, Co. Derry.
1922. Marshall, Miss M. E., 82 Ardenlee Avenue.
1922. Martin, F. C., Laurelvale, Crumlin.
1916. Masterson, Miss, 93 Wellesley Avenue.
1915. Mawdsley, Miss, 28 Green Road, Knock.
1908. Maxwell, Henry, Dunalbine, Deramore Park.
1923. Maxwell, Joseph, J.P., Fierna, Osborne Park.
1923. Maxwell, Miss F. E., do.
1892. Maxton, Jas., M.I.N.A., 6 Kirkliston Drive, Bloomfield.
1919. Mayes, A. S., 23 Glandore Avenue.
1903. Mayne, H. Horner, 24 Elmwood Avenue.
1921. Meakin, Chas., 119 The Mount.
1917. Megaw, Rev. W. R., B.A., The Manse, Rosetta.
1920. Megaw, I. J., 26 Linenhall Street.

1923. Mercer, S., "Hanging Leaves," Jordanstown.
1923. Mercer, Mrs. S. do.
1921. Mercier, S. T., J.P., 89 Cliftonville Road.
1918. Metcalfe, A. W. Hawthornden Road, Knock.
1922. Meyer, Sir Robert, St. Clair, Windsor Avenue.
1906. Millar, Thomas O., 306 Antrim Road.
1907. Milligan, Miss Bessie, 22 Ravenhill Gardens.
1921. Milligan, Dr. C. J., Dispensary House, Ligoniel.
1922. Moffatt, James A., 2 Chelmsford Place, Larne Harbour.
1922. Money Penny, Sir Frederick, C.V.O., C.B.E., City Hall.
1911. Montgomery, Thos. Ward, 40 Rosemary Street.
1898. Montgomery, H. C., F.R.S.A.I., 40 Rosemary Street.
1913. Montgomery, Miss E. S., 26 College Green.
1920. Montgomery, Miss S., 120 Eglantine Avenue.
1920. Montgomery, Miss G., 120 Eglantine Avenue.
1911. Montgomery, Miss Jane E., 8 Sandhurst Road.
1916. Moore, Frank, J.P., Ph.D., F.E.I.S., Home-Lyn, Marlborough Park North.
1922. Moore, Lord Justice, D.L., Moore Lodge, Kilrea.
1922. Morris, A., M.P.S.I., 120 Ravenhill Road.
1917. Morrison, Rev. Robert N., B.A., Magherahamlet Rectory, Ballynahinch.
1921. Morrison, Miss I., Southleigh, Knockbreda Park.
1922. Morton, Mrs., 65 Ulsterville Avenue.
1921. Mullowney, J., A.M.I.E.E., Rathverde, Cherryvalley Park.
1922. Murray, B., 628 Ravenhill Road.
1923. M'Allister, Wm. James, 134 Rugby Avenue.
1915. MacCarthy, Mrs., Freshford, Knock.
1905. MacCleary, A., Kensington Hotel, College Square East.
1901. MacRae, Kenneth, Ulster Agricultural Society, Balmoral.
1921. M'Cloy, Miss A. E., Cuil-na-Mban, Norfolk Drive, Glen Road.
1899. M'Bretney, W. A. J., 31 Haypark Avenue.
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- 1904. Wilson, Mrs. Ardenza, King's Road.
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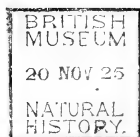
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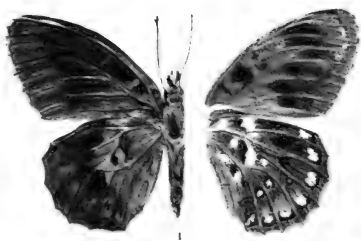


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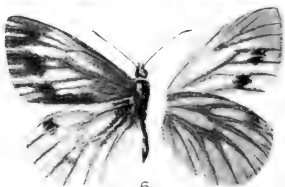
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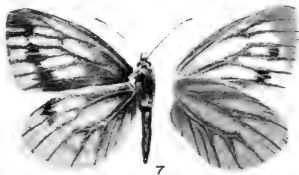
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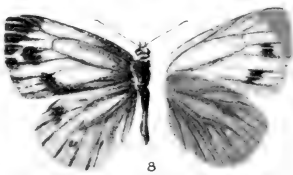
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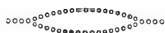
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THE LEPIDOPTERA
OF
THE NORTH OF IRELAND.

BY
THOMAS GREER.



Being an Appendix (No. 4 of Vol. III.) to the
Proceedings of
The Belfast Naturalists' Field Club
for 1922-23



THE LEPIDOPTERA OF THE NORTH OF IRELAND.

BY

THOMAS GREER.

Introduction.

The following contribution is a record of the additions to the lepidoptera of the North of Ireland met with since the completion of the late Mr. Wm. F. de V. Kane's catalogue, some twenty-two years ago; and not, as the title might infer, a complete account of the lepidoptera of the area treated.

Notes on the more striking or interesting varieties of generally abundant species are also included, with new localities for the rarer insects.

A special feature in these recent years is the occurrence in the North of a large group of species long believed to be found almost exclusively in the milder and warmer districts in the South, such as *Gnophria quadra*, *G. rubricollis*, *Amphipyra pyramidea*, *Taeniocampa pulverulenta*, *Acronycta leporina*, *Dianthoecia caesia*, *Caradrina exigua*, *Hecatera serena*, *Heliothis peltigera*, *Charielea umbra*, *Eugonia erosaria*, *Amphidasys strataria*, and *Eupithecia plumbeolata*. In another class are the following insects, which are either very rare, or have been overlooked in the South, viz., *Dasychira fascelina*, *Drepana falcula*, *Apamea unanimis*, *Orthosia suspecta*, *Plastenis subtusa*, *Eupithecia pygmaeata* and *Melanippe unangulata*.

A number of species, and some recently recorded from the district, here reach their most northern limit in the British Isles, of which the following are striking examples:—*Argynnis paphia* (excluding the now ancient and single records from the North of England and Southern Scotland), abundant in the Ards Peninsula, North Donegal (although Barrett gives Co. Armagh as its northern limit); *Lycaena argiolus* (*Cyaniris*), woods near Rathmullan, Co. Donegal; *Dianthoecia caesia*, north coast of Co. Donegal; *Apamea ophiogramma*, Co. Derry; *Caradrina exigua*, Co. Armagh, on Lough Neagh; *Amphipyra pyramidea*, Co. Fermanagh, Tempo; Co. Tyrone, Cookstown, not rare; *Cosmia affinis*, Co. Derry; *Xylina socia*, Co. Donegal, Buncrana; *Bomolocha fontis*, shores of Lough Foyle, Co. Derry; *Geometra vernaria*, Co. Tyrone, Coalisland (introduced); *Melanippe unangulata*, South Derry, and Co. Tyrone, near Cookstown, not uncommon; *Boarmia cinctaria*, Co. Donegal, Glenveagh, abundant, and *Zygaena lonicerae*, Counties Donegal and Tyrone.

At first sight this list may appear somewhat meagre, when compared with what has been done among the lepidoptera in very similar districts in England; but it must be remembered that since the late Mr. Kane relinquished the investigation of our native species, the number of Irish lepidopterists who have made a study of the local fauna and have recorded their experiences can be counted upon the fingers of one hand.

When the above fact is taken into consideration the results obtained will compare favourably with what has been accomplished by a much larger number of specialists and collectors in more attractive districts across the Irish Sea. Notwithstanding Mr. Kane's dictum, that "Ulster is very unprofitable to the entomologist," a number of species are here more abundant generally than in Great Britain, of which the following are examples:—*Pararge egerides*, *P. megaera*, *Aphantopus hyperanthus*, *Argynnis paphia*,

Melitaea aurinia, *Euchloë*, *cardamines*, *Pieris napi*, *Choerocampa elpenor*, *Macroglossa bombylifformis*, *Euchelia jacobaeae*, *Apamea leucostigma*, *Calocampa vetusta*, *Xylina socia*, *Plusia bractea*, *P. festucae* and *Hydrelia uncula*.

I desire to tender my grateful thanks to the following entomologists who have rendered much assistance, either with lists of species captured in the area, or valuable personal information and descriptions of interesting varieties and local forms:—Rev. F. W. Johnson, M.A.; Sir Charles Langham, Bart.; Dr. J. W. H. Harrison, Messrs. W. M. Crawford, J. S. Wilson and others.

NOTE.—Species marked thus * are unrecorded for the area in Mr. Kane's catalogue of the Lepidoptera of Ireland. The nomenclature in this list follows that adopted by Mr. Kane, but, for the sake of entomologists who may not have access to the older books, alternative names as used in South's "Butterflies" and "Moths" have been added in brackets.

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RHOPALOCERA.

PIERIDÆ.

Pieris brassicae, L. In some seasons fine forms of the female occur with the discal spots connected by a suffusion of dark scales, also sometimes with the apical blotch extending to the discal spots, and occasionally with a black spot in the disc of the posterior wings. The ground colour is in rare instances of a pale yellow. (Kane, p. 1.)

Pieris rapae, L. This species varies in a similar manner as the preceding; females are common (especially

in the summer emergence), with a well marked discal spot in hindwing, the ground colour varying from cream to dirty yellow; the basal suffusion of dark scales in rare instances extends to the discal spots on anterior wings; males of the spring brood often have the dark apex of forewing absent or very indistinct. (Kane, pp. 1 and 155.)

Pieris napi, L. Nowhere else perhaps in the British Isles does this common species exhibit such extremes in variation of colour, and extent of the dark scaling on the wings, as in the North of Ireland.

It varies, in the male, from an almost white ground colour with only a very faint apical mark on forewings to one with strongly marked apical blotch and large black discal spot, which may be joined by black dashes to the apex; many examples have a second spot near the inner margin, and in rare instances these two spots may be joined together by a clouding of dark scales. The female varies from a pale poorly marked form (in some examples from Co. Tyrone the inner marginal dash is absent), to one in which the forewings are heavily streaked with grey or black along the veins (Plate, fig. 6), the discal spots, either distinct or blurred together (Plate, fig. 7); when the ground colour is ochreous this form closely approaches the Alpine var. *bryoniae*. These handsomely marked varieties are to be met with generally on low-lying or marshy ground at a moderate elevation; the forms occurring on the hills being by comparison much less striking.

Banded aberrations, with the inner marginal streak, discal spots and apical blotch confluent, are not rare in some seasons (Plate, figure 7).

In both broods, pale yellow and ochreous forms are now uncommon; and males of a pale yellow are recorded by Sir C. Langham from Co. Fermanagh. Sir C. Langham has

also captured two beautiful female aberrations—one, with the costa, borders and fringes of all wings tinted with sulphur yellow; the other has the discal areas broadly suffused with primrose yellow. In the summer brood, more especially, examples sometimes occur with three distinct spots on the hindwings on upper side (Plate, figure 8).

In the year 1918 Mr. W. H. Head, of Scarborough, bred a large number of canary yellow forms of both sexes, from parents originally received from Co. Donegal. These yellow aberrations, although sent out as var. *flava*, are not of the deep saffron-yellow colour which distinguished the original aberration so named by Mr. Kane.

On the undersides the colour of the posterior wings varies from a pale yellow to a deep yellow-orange; the veins are either lightly marked with dark scales, or the suffusion may be intense and very black; this occurs in both broods.

Dr. Verity's statement (Entom. Record, Vol. XXXIV., p. 127) "That the generation which emerges from hybernated chrysalids (i.e., the spring brood) is by far the most variable and the most abundant as a rule," does not coincide with my experience in Tyrone, where, taking the average season, the summer emergence is almost always more plentiful and more variable than the spring brood. (Kane, pp. 1 and 155).

Euchloë cardamines, L. A number of interesting varieties of this beautiful and generally abundant butterfly have been noted of late years, of which the following are the the more striking:—

MALE FORMS.

Ab. **sulfureovenata**, Keynes. (Entom. Record, Vol. XXII., p. 239). Upper side hindwings with the upper margin of the discal cell and the four veins radiating therefrom strongly dusted with sulphur yellow. Co. Tyrone, rare.

Ab. **flava**, Williams. The ground colour of both fore and hindwings of a bright canary yellow. A pale yellow form approaching this from Cos. Tyrone and Fermanagh.

Ab. **marginata**, Gr. With the black outer marginal dots confluent, and united to the apical blotch, forming a continuous border along the outer margin of the forewing. Co. Tyrone, several in succeeding seasons.

Male aberrations sometimes occur with the orange patch much suffused with dark scales, or divided by dark streaks along the veins; the orange patch varying from bright orange to dull pale orange.

FEMALE FORMS.

Ab. **ochrea**, Tutt. The posterior wings yellow. This form is common; in some extreme examples the hindwings are almost of a saffron-yellow.

Ab. **caulotosticta**, Wms. Forewings above, with the discoidal spot large and branched, the upper portion extending along the subcostal vein towards the base. This variety is fairly common wherever the species is abundant.

FORMS OCCURRING IN BOTH SEXES.

Ab. **radiata**, Wms. Forewings on upper side, with a number of black streaks from the black apical blotch, towards, and in extreme specimens joining, the discoidals. Several males and one female from Co. Tyrone, in the latter the discoidal is also branched and a dark line extends almost to the base of the wing as in ab. *caulotosticta*.

Ab. **dispila**, Raynor. With an oblong black blotch below the discoidal, on the underside of forewings; this is, no doubt, the same form as described by Barrett in his "British Lepidoptera" as having a black V mark on the

middle of the underside of forewings. This variety, though apparently rare in Great Britain, appears to be not uncommon in Co. Fermanagh, judging from the comparatively large series in Sir C. Langham's collection taken at Tempo; two examples have been recorded from Co. Tyrone.

Mr. H. B. Williams in 1914 named the local form var. **hibernica**. This differs from the English type in its smaller size, the black dots at the ends of the nervures more strongly marked; in the male the underside of forewing is usually suffused with yellow; in the female the hindwings are tinged with dirty yellow; the figures of this form in South's "British Butterflies" are rather poor, and do not do justice to our fine, distinctly marked local race.

GYNANDROMORPHS.

The two examples depicted on the plate were captured by me on the same day, May 27th 1922; in the first (Fig. 4 A.B.) the left forewing is streaked with the male colour; and in the second (Fig. 3A.B.) the right forewing has several irregular orange streaks and is also of the var *caulotosticta*, the hind wings with black discal spot var. *quadripunctata*, Fuchs. On the underside, both specimens have the forewings streaked and blotched with orange and the subcostal areas dusted with pale yellow. The second aberration is of special interest as it combines three varieties in the one example. Both are from East Tyrone. (Ento. Record, Vol. XXXIV.. p. 183.) (Kane, p. 3.)

Leucophasia sinapis, L. Two examples taken by Sinclair near Enniskillen in May, 1875; I can find no recent records of this species in the North. (Kane, pp. 3 and 155.)

Gonopteryx rhamni, L. A single specimen seen on the wing by Mr. W. B. Rathborne near Pettigo, Co. Fermanagh, May 27th, 1918 (Irish Nat.. Vol. XXVII., p. 173.) *Rhamnus catharticus*, a food plant of this species is common on Lower Lough Erne; perhaps the insect is native in this district. (Kane, pp. 4 and 155.)

NYMPHALIDÆ.

Argynnis aglaia, L. This fine species, which is generally confined to the coast in the North, has in recent years been observed in several inland localities, in Cos. Fermanagh (Langham), Armagh (Johnson) and Tyrone (Harrison and Greer). (Rev. F. W. Johnson's note on the distribution of this insect in Ireland in Irish Naturalist Vol. XXX., p. 44.)

A beautiful and unique aberration (as far as Ireland is concerned) was captured by Mr. W. G. Crawford on the sandhills at Portballintrae, Co. Antrim, in August, 1919. (Plate, Fig. 1.) This fine melanic female form has the upper side wings very dark and richly marked, with the outer margins heavily rayed. (For full description see Irish Nat. Vol. XXX., page 15.)

Barrett records a variety received from the North of Ireland by Mr. R. A. Adkin, F.E.S., with the first two spots from the base of the costa joined together into a large uniform blotch. (Kane, p. 4.)

Argynnis paphia, L. A male form with pale coloured spots, on right upper and lower wings is recorded from a mountain glen in Co. Tyrone; this aberration was believed to be confined to the New Forest. This fine butterfly is local, but often abundant in Cos. Donegal, Fermanagh and Tyrone; less common in Cos. Armagh, Down and Antrim, but found plentifully at Parkmore in the latter county. (Kane, p. 5.)

***Melitaea aurinia**, Rott. This interesting and variable little butterfly is found locally in Cos. Donegal (Johnson), Fermanagh (Allen and Langham), Derry and Tyrone (Greer); apparently absent from Cos. Antrim, Down and Armagh.

Variation. I would agree with Dr. Verity (Entom. Record, Vol., XXXVIII., p. 128) in referring all forms in

which the central series of spots is whitish in colour to Birchall's var. *hibernica*. This occurs as an occasional aberration wherever the species is abundant; the example illustrated (Plate, Fig. 5) is from Tempo, Co. Fermanagh.

The prevailing form in most localities is var. *praeclara*, Kane, characterised by having the middle series of spots of a bright straw colour, with the ground colour darker than the type.

In var. *scotica*, the median series are of a more ochreous colour than the preceding, and the black markings are generally more intensified; this form is not uncommon in Cos. Fermanagh and Tyrone.

In all the above forms the median spots may be much extended, or sometimes confluent—as in var. *virgata*, Tutt. On the other hand, the dark colour often spreads over the wings, obliterating the fulvous basal spots on forewings, and most of the pale series on the hindwings, and reducing the size of the remainder, especially on the outer areas; this dark form has been named var. *nigra* by Mr. Freke (Entom. Vol. XXXVI., p. 110). In some seasons this dark variety is not uncommon, and an extreme example with the forewings almost all black has been recorded from Co. Donegal. The typical English form, var. *artemis*, Fab., is only found as a rare aberration. (Kane pp. 5 and 155.)

Vanessa urticae, L. Handsome banded forms of this familiar butterfly are sometimes not uncommon, approaching var. *polaris*; sometimes the yellow costal patches are replaced by dull white. In an example from Co. Tyrone the blue crescents are extended into the white apical spot on forewings; and the blue crescents are absent on margins of hindwings. (Kane, p. 9.)

Vanessa io, L. Common in recent years in Cos. Fermanagh, Tyrone, Derry, Antrim, Down and Armagh. Many examples have a small blue spot below the ocellus on

the hindwing, var. *cyanosticta*, Raynor. Two specimens from Tyrone are recorded in the "Entomologist" by Mr. F. C. Woodforde, with a black spot in the inner discal area of forewings. (Kane, pp. 9 and 155.)

Vanessa antiopa, L. An example of this fine insect was taken by Mr. Rake near Cookstown in August, 1904. (Kane, p. 10.)

Vanessa atalanta, L. (*Pyrameis atalanta*.) Not often abundant in the North, but in the autumn of 1921 it appeared in large numbers, accompanied to a lesser degree by the next species. An aberration was captured the same year in East Tyrone with the red marginal band on hindwings replaced by dull orange, shading to yellow towards the fringes, as well as a specimen with the buff colour on the underside of hindwings much intensified. (Kane, p. 10.)

Vanessa cardui, L. (*Pyrameis cardui*.) Usually rare, but in 1921 it was abundant on the north coast and common in some inland localities. In several males from Co. Tyrone the hindwings above are very dark. (Kane, p. 10.)

SATYRIDÆ.

Pararge egeria, var. *cgerides*, Stgr. Mr. Kane states "Everywhere abundant and double-brooded." In most localities and seasons it is triple brooded, occurring in April and May, July, and September; and in the year 1921 a fourth emergence took place at the beginning of October.

In the females of the spring brood, the pale blotches are often much extended; and the males of the late autumn emergence are not uncommonly very dark, with only a few small pale spots indicated. These dark forms have been recorded from Cos. Donegal, Down, Fermanagh and Tyrone. (Kane, p. 11.)

Pararge megaera, L. More local than the preceding. Not infrequently examples occur with double apical ocelli, var. *bipupillata*, or with extra dots between the veins, on the forewings below the "eye" spot. A handsome form of the female is found occasionally, in which the space between the central transverse lines is filled in with blackish brown, var. *mediolugens*, Fuchs. In a male aberration from Co. Tyrone the apical ocelli are reduced to tiny black dots. (Kane, p. 11.)

Epinephele ianira, L. A fine form of this butterfly is found not uncommonly, in which the fulvous colour is much intensified in the male; the female also often has a broad band of the same colour toward the outer margins of the hindwings; this form closely approaches var. *hispulla*, Hüb. Examples of var. *addenda*, Mousley, with additional ocelli, or dots in the fulvous area, below the apical ocellus, either on upper or under side of forewings, are not rare; and sometimes in the male a small ocellus appears near the anal angle of the hindwing. (Kane, p. 12.)

Coenonympha typhon, Rott. This species has been observed recently in Co. Antrim, viz., near Ballymoney (D. C. Campbell), Lough Naroon, and on the mountains near Garron Point (Dr. R. Ll. Praeger); these records are quoted as Mr. Kane does not give any localities for the county. (Kane, pp. 13 and 156.)

Coenonympha pamphilus, L. A male from Co. Tyrone has two black dots on margin of hindwings above and near the anal angle. (Kane, p. 13.)

LYCÆNIDÆ.

Polyommatus phlaeas, L. (*Chrysophanus phloeas*.) The following aberrations of this brilliant little butterfly have been recorded; with forewings brassy, the hind margin dull white—several of this form, the white areas varying in

individual examples, from Cos. Fermanagh and Tyrone; with wedge shaped spots on forewings as in South's "British Butterflies," Plate 101, Fig. 6; with forewing spots large, var. *magnipuncta*, Tutt., and with spots very small and some absent, var. *parvipuncta*, Tutt. (Kane, p. 14.)

Lycaena icarus, Rott. The brilliant local form of this insect, var. and race *clara*, Tutt., is abundant in suitable spots on the coast; less abundant and more local inland. The male varies from a blue colour approaching *L. bellargus*, to a pale lavender; sometimes the ends of the nervures are black and extend into the fringes of all wings; not uncommonly there is a series of black spots on the margin of the hindwings, var. *nigromaculata*, Ckll.; in rare instances red spots appear above the black ones near the anal angle. The female varies from a brown colour with a few blue scales at the base of all wings, to one in which the wings are almost as blue as the male; with the marginal row of orange crescents either very large and confluent or small and inconspicuous. Not infrequently the discal spots on all wings are surrounded with white, or bluish white scales. On the underside the spots are usually small and not uncommonly the basal ones on forewings are absent, var. *icarinus*, Scharf. Rarely the whole of the underside of hindwing (with the exception of the discal and marginal area) is free of spots, var. *postico obsoleta*, Tutt. In two examples taken in Co. Derry the undersides of the forewings have a broad white wedge-shaped mark from the discoidal, and tapering to a point towards the base. The symmetrically halved gynandromorph illustrated on the plate (Fig. 2 A.B.) was captured by me at Coalisland in July, 1917. (Kane, p. 15.)

Lycaena argiolus, L. (*Cyaniris argiolus*.) Observed in some numbers by Mr. G. Coulter in woods near Rathmullan. Ramelton, and Milford, Co. Donegal, in May. 1917. (Entom., Vol. L., page 236.) (Kane, p. 17.)

HETEROCERA.

SPHINGIDÆ.

Acherontia atropos, L. This fine insect has occurred recently in the following localities:—Co. Donegal, Coolmore, September, 1914 (Johnson); Dowros (F. B. Dixon); Co. Armagh, Newry, 1909 (Johnson); Co. Tyrone, Dungannon, 1914 (Rev. J. Jennings); Newmills (Greer). Larvae taken at Moyallon, Co. Down, 1917 (Johnson). (Kane, pp. 18 and 156.)

Sphinx convolvuli, L. The following are the latest records of this immigrant:—Co. Derry, 1903 (Campbell); 1904, near Derry City (Campbell); Co. Antrim, Knocknacarry, September, 1904 (Rev. S. A. Brennan); Antrim Castle, 1917; Co. Down, Knock. September, 1903 (Orr); Moyallon, 1917; Co. Donegal, Rathmullan, and Greencastle, 1917; Co. Tyrone, Cookstown, 1917 (Greer). (Kane, p. 18.)

Deilephila livornica, Esp. An example of this rare species is recorded by Mr. D. C. Campbell from Derry, June, 1906. (Kane, pp. 19 and 156.)

Smerinthus ocellatus, L. The larvae of this handsome insect are locally abundant in Cos. Fermanagh and Tyrone, and near Belfast. (Kane, pp. 20 and 156.)

***Choerocampa porcellus**, L. Taken near Rossnowlagh, Co. Donegal, by Mrs. Trinder, and at Poyntzpass, Co. Armagh (Johnson). (Kane, p. 20.)

ZYGÆNIDÆ.

Ino statice, L. Locally abundant in Co. Fermanagh, at Tempo (Langham); Co. Donegal, at Coolmore, and near Ballintra; the specimens from the latter locality, of a deep blue (the type), which is much less common than the green form; Co. Tyrone, near Tamnamore, and at Cookstown. (Kane, p. 22.)

Zygaena lonicerae, Esp. First discovered in Ireland by Rev. F. W. Johnson on the Mullinure meadows, near Armagh; locally abundant in Cos. Donegal, Armagh, Fermanagh and Tyrone. In Co. Donegal it reaches its northernmost limit in the British Isles. (Kane, pp. 23 and 157.)

LITHOSIIDÆ.

***Lithosia complana**, L. Several taken at Lissan and near Tamnamore, Co. Tyrone. (Kane, p. 24.)

Gnophria quadra, L. (*Oeonestis quadra*.) A single example on Carlingford Mountain. (Kane, pp. 25 and 157.)

Gnophria rubricollis, L. (*Atolmis rubricollis*.) Not uncommon at Tempo Manor, Co. Fermanagh (Langham); Lissan, near Cookstown, and at Tamnamore, Co. Tyrone; Churchill, Co. Armagh. (Kane, pp. 25 and 157.)

EUCHELIIDÆ.

Euchelia jacobaeae, L. (*Hipocrita jacobaeae*.) This species, which is very local in the North of England and is only common there on the coast, is abundant and widespread in the North of Ireland. In June, 1915, Sir C. Langham captured, in the demesne at Tempo, five of the very rare form in which the red is replaced by ochre yellow colour on all wings. (Kane, p. 25.)

CHELONIIDÆ.

Nemeophila russula, L. (*Diacrisia sanio*.) Very local, but sometimes not uncommon, Portnoo, Co. Donegal (Johnson); near Correl Glen, Co. Fermanagh (Langham). (Kane, pp. 25 and 157.)

Arctia caia, L. To be met with in the larval stage almost everywhere; the following aberration was bred with several others less striking, by Sir C. Langham:—forewings, asymmetrical in pattern, smoky brown with the normal

white markings greatly reduced; hindwings, red colour entirely replaced by lustrous blue-black, except base and inner margins, which are of a yellow-brown colour. (Kane, p. 26.)

Spilosoma mendica, Clerck. (*Diaphora mendica*.) The prevailing form is the var. *rustica*, Hb., in which the male is white or pale cream colour. In East Tyrone a pale brown form of the male occurs; Mr. R. Adkin has lately named a streaked form from this district var. *venosa*. The var. *rustica* is found in Cos. Armagh (Johnson), Antrim (Watts) and Tyrone (Greer); in the latter county often more abundant than *Spilosoma menthastri*, Esp. (Kane, pp. 26 and 157.)

HEPIALIDÆ.

***Hepialus lupulinus**, L. (*Hepialus lupulina*.) Local at Armagh (Johnson); on the shores of Lough Neagh, and near Stewartstown, Tyrone. (Kane, p. 158.)

LIPARIDÆ.

Dasychira fascelina, L. Larvae sometimes not uncommon near Tamnamore, Co. Tyrone, where a female was found at rest on the heather in June, 1915. (Kane, pp. 29 and 158.)

DREPANULIDÆ.

Drepana falcula, Schiff. (*Drepana falcataria*.) Local but not uncommon in Cos. Fermanagh, Enniskillen; Tyrone, Favour Royal, Tamnamore, and near Stewartstown, and Co. Armagh, Churchill, often abundant. (Kane, p. 31, *falcula*; p. 158, *falcataria*.)

CYMATOPHORIDÆ.

Asphalia flavicornis, L. (*Polyploca flavicornis*.) Larvae found near Tamnamore and imagines bred. (Kane, pp. 37 and 159.)

BOMBYCOIDÆ.

***Acronycta leporina**, L. Three imagines at rest and a series bred by Sir C. Langham from larvae found at Tempo, Co. Fermanagh; a single example at rest on a birch trunk near Maghery, Co. Tyrone. (Kane, pp. 39 and 159.)

Acronycta menyanthidis, Vw. Very local, but sometimes not rare; Co. Antrim, larvae not uncommon on bogs near Ballymoney (Campbell); Co. Tyrone, series bred from larvae found on bogs near Washing Bay, Lough Neagh (Greer); several larvae near Lough Fea (Harrison). (Kane, pp. 40 and 159.)

***Acronycta euphorbiae**, var. *myricae*, Gn. A single example is recorded from Slieve Glah, Co. Cavan; a specimen was observed, but not captured, on a bog near Knocklayd, Co. Antrim. (Kane, p. 40.)

LEUCANIIDÆ.

Calamia lutosa, Hb. Recorded in the supplement to Mr. Kane's catalogue from Enniskillen; locally common in reed-beds in East Tyrone. (Kane, pp. 42 and 160.)

APAMEIDÆ.

Gortyna ochracea, Hb. (*Ochria ochracea*.) Larvae found not uncommonly by Prof. Harrison on marsh thistle stems in East Tyrone. (Kane, pp. 42 and 160.)

Hydroecia crinanensis, Burrows and Pierce. (*Hydroecia nictitans*.) Nearly all specimens recorded as *H. nictitans* are referable to the present species. Generally abundant in marshy localities in Cos. Donegal, Derry, Antrim, Fermanagh and Tyrone. (Kane, p. 43, *Hydroecia nictitans*.)

Hydroecia lucens, Burrows and Pierce. Apparently confined to mountain bogs and the mosses at Lough Neagh. (Kane, p. 43.)

Hydroecia micacea, Esp. A very large dark form of the female, approaching the closely allied *H. petasitis* was captured by Rev. F. W. Johnson at Poyntzpass, Co. Armagh. (Kane, p. 43.)

Xylophasia sublustris, Esp. A single example is recorded by Rev. F. W. Johnson from Donegal. (Kane, pp. 44 and 160.)

Mamestra albicolon, Hb. Not rare at sugar on sand-hills near Buncrana, Co. Donegal; Magilligan, Co. Derry (Campbell). (Kane, pp. 46 and 160.)

Mamestra furva, Hb. (*Hama furva*.) Bundoran and Coolmore, Co. Donegal (Johnson); rare in Co. Tyrone. (Kane, pp. 46 and 160.)

Mamestra persicariae, L. A single example taken near Antrim. (Kane, p. 47.)

***Apamea unanimitis**, Tr. Locally abundant and widely spread in East Tyrone; Prof. Harrison discovered the larvae among *Phalaris arundinacea*; the imago is to be taken at dusk (and later with the aid of a light), flying or at rest on this grass. (Kane, p. 47.)

***Caradrina exigua**, Hb. A single example of this rare species was taken by Rev. G. Foster at ragweed flowers on the shore of Lough Neagh, near Lurgan, Co. Armagh, in 1904.

Agrotis vestigialis, Hufn. Mr. Kane gives no inland locality for this generally littoral species; yet it is sometimes not uncommon at ragweed and heather blossom on the shore of Lough Neagh, at Washing Bay, Co. Tyrone. (Kane, p. 53.)

Agrotis saucia, Hb. Not often met with in inland localities; a short series captured during several seasons in East Tyrone. (Kane, pp. 54 and 160.)

***Agrotis cinerea**, Hüb. A single example taken at light at Tullylagan, near Cookstown, Co. Tyrone, June, 1897. (Irish Nat., Vol. X., page 202.)

Agrotis corticea, Hb. Several captured at light and on grass glumes in East Tyrone, though generally only occurring on the coast. (Kane, pp. 56 and 160.)

Agrotis tritici, L. Another common littoral species which is frequent in sandy localities in East Tyrone. (Kane, p. 57.)

Agrotis agathina, Dup. Common on the low lying bogs in East Tyrone and North Armagh. Very variable. (Kane, p. 58.)

***Amphipyra pyramidea**, L. Not recorded from the North of Ireland in Mr. Kane's catalogue; first taken by Sir C. Langham in numbers at Tempo, Co. Fermanagh; also locally abundant in East Tyrone; an example at light, Rostrevor, Co. Down (Johnson). (Kane, p. 63.)

Taeniocampa opima, Hb. This local species is abundant on Lough Neagh, near Lurgan, Co. Armagh; not rare at Tamnamore, East Tyrone. (Kane, pp. 66 and 161.)

Taeniocampa pulverulenta, Esp. This species, which is very rare in the north, has been captured in some numbers by Sir C. Langham at Tempo. (Kane, pp. 67 and 161.)

Orthosia suspecta, Hb. (*Dyschorista suspecta*.) Recorded somewhat doubtfully in Mr. Kane's catalogue from Londonderry by Sinclair; lately found abundantly in Co. Armagh, Churchill; and Tyrone, Tamnamore and near Cookstown. (Kane, p. 68.)

***Dianthoecia caesia**, Bork, var. *manani*, Gregson. Discovered by the late Mr. J. E. R. Allen, of Enniskillen, on the Donegal coast, its most northern habitat in the British Isles; latterly Sir C. Langham found the larvae in the same locality and bred a series of the insect, of the usual Irish form. (Kane, pp. 73 and 166.)

Epunda nigra, Haw. (*Aporophyla nigra*.) Two examples of this rare species captured by Rev. F. W. Johnson near Poyntzpass, Co. Armagh; a single example near Cookstown some years ago; this year (1923) several captured in same locality; and also found in abundance near Magiligan, Co. Derry. (Kane, p. 79.)

***Hadena protea**, Bork. Several occurred in different years at sugar in East Tyrone. This species appears to be very rare in Ireland, and only known previously from Cos. Galway, Westmeath and Wicklow. No doubt it exists in many districts where remnants of the ancient oak forests survive.† (Kane, pp. 81 and 161.)

Xylina socia, Rott. (*Lithophane (Xylina) socia*.) This species which is very rare in the North of England is found often in abundance as far north in this area as Buncrana, Co. Donegal. (Kane, p. 86.)

Plusia bractea, Fb. In 1902 forty-seven specimens of this rare species were captured at flowers at Tempo, Fermanagh, by Sir C. Langham; other localities are—Co. Antrim, near Ballymoney; Tyrone, Cookstown. Sometimes not rare. (Kane, pp. 88 and 161.)

***Heliothis peltigera**, Schiff. A single example captured at privet blossom in the year 1902, at Tempo (Langham). (Kane, p. 90.)

Chariclea umbra, Hufn. (*Pyrrhia umbra*.) Two specimens taken by Sir C. Langham at Tempo, Co. Fermanagh, in 1902. (Kane, pp. 90 and 162.)

† Numbers of this insect were taken in oak woods at Rostrevor, by Mr. H. T. Malcomson, late September, 1920.

Euclidia glyphica, L. Common about the shores and on the islands of Lough Erne (Langham). (Kane, pp. 91, 162 and 166.)

***Hydrelia uncula**, Clerck. Often locally abundant in damp meadows near Tamnamore, Lough Neagh. (Kane, pp. 91 and 162.)

GEOMETRÆ.

Eurymene dolobraria, L. A series of nine at Tempo, Co. Fermanagh, captured at intervals over a number of seasons (Langham); several imagines and larvae beaten near Cookstown and Stewartstown, Co. Tyrone. (Kane, pp. 94, 162 and 166.)

Selenia lunaria, Schiff. Several taken at light at Tempo, Co. Fermanagh (Langham); two at Lissan, near Cookstown, Co. Tyrone. (Kane, p. 94.)

Eugonia alniaria, L. (*Ennomos alniaria*.) Local, but not uncommon at Tempo, Co. Fermanagh; and near Cookstown, Co. Tyrone. (Kane, p. 95.)

***Eugonia erosaria**, Bork. (*Ennomos erosaria*.) A single specimen at Poyntzpass, Co. Armagh (Johnson). (Kane, p. 95.)

Eugonia quercinaria, Hufn. (*Ennomos quercinaria*.) Two examples at light, Tempo, Co. Fermanagh (Langham); several near Cookstown, Co. Tyrone (Kane, p. 95.)

Phigalia pedaria, Fb. This species which is noted by Mr. Kane as scarce (with the exception of the Belfast district), is not uncommon at Tempo, Co. Fermanagh (Langham). Rev. F. W. Johnson bred a beautiful specimen from an Armagh pupa, extensively suffused with yellow; it was submitted to the late Mr. Barrett, who stated it was the most extreme yellow form that he had seen; not rare near Cookstown at light and larvae not infrequently beaten. (Kane, p. 95.)

***Amphidasys strataria**, Hufn. (*Pachys strataria*.) This handsome insect hitherto recorded only from the southern half of Ireland, has occurred as follows:—Tempo, Co. Fermanagh, four males at light (Langham); Cookstown, Co. Tyrone, two females at rest on tree trunks, and an example bred from a larva beaten from wild cherry. (Kane, pp. 97 and 162.)

Geometra papilionaria, L. Local, but often not uncommon, Co. Armagh, Maghery (Johnson); Co. Down, Loughbrickland; Co. Fermanagh, Tempo (Langham); Co. Tyrone, near Cookstown and Stewartstown; Co. Derry (D. C. Campbell). (Kane, p. 102.)

***Geometra vernaria**, Hb. Several captured in succeeding seasons by Messrs. Coulter and Wilson in gardens at Coalisland, Co. Tyrone (Entom., Vol. L., p. 237, and Vol. LI., p. 187); probably introduced with *Clematis vitalba* which is common in the locality. (Kane, p. 102.)

Zonosma pendularia, Clerck. (*Ephyra pendularia*.) This handsome little moth is common among birch scrub growing on the hillsides near Buncrana, Co. Donegal. (Kane, p. 102.)

Acidalia inornata, Haw. Not uncommon among heather and dwarf birches near Churchill, Co. Armagh, and Tamnamore, Co. Tyrone. (Kane, p. 104.)

***Bapta temerata**, Hb. Local, but often not uncommon at Tempo, Co. Fermanagh (Langham); near Stewartstown among blackthorn, at Tamnamore among birch, Co. Tyrone; a single specimen near Emyvale, Co. Monaghan. (Kane, pp. 104 and 162.)

Macaria liturata, Clerck. (*Semiothisa liturata*.) A pine-feeding species which, in common with several others, is rapidly extending its range in Ireland; Mr. Kane gives only one locality (Newcastle, Co. Down) in the North. Occurs in Co. Derry, near Garvagh; in Co. Armagh, near Churchill,

and in Co. Tyrone at Tamnamore and Lissan, near Cookstown. (Kane, p. 105.)

Strenia clathrata, L. (*Chiasmia (Strenia) clathrata*.) Not often found in any numbers, but occurs in swarms in the damp meadows at Tamnamore, Co. Tyrone. (Kane, p. 105.)

***Panagra petraria**, Hb. (*Lozogramma (Phasiane) petraria*.) Mr. Kane does not quote a single locality in the North for this species, but it is locally abundant at Tempo, Co. Fermanagh; Churchill, Co. Armagh; and near Cookstown, Co. Tyrone. (Kane, p. 105.)

Scodiona belgiaria, Hb. (*Scodiona fugaria*.) A fine series bred from larvae swept from heather in February and March at Tempo (Langham); imago near Lough Fea and at Tamnamore, Co. Tyrone; and Churchill, Armagh (Johnson). (Kane, p. 106.)

Selidosema ericetaria, Vill. This local species has been recorded in some numbers from Co. Armagh (Johnson); also occurs on bogs near Washing Bay, Lough Neagh, Co. Tyrone, where an almost black form (*fumosa*, Mihi) and a blackish streaked one (*intermedia fumosa*, Turner) have been captured. (Kane, pp. 106 and 163.)

Aspilates strigillaria, Hb. Local, but often abundant on low-level bogs at Churchill, Co. Armagh, and in Co. Tyrone, near Washing Bay, Lough Neagh. (Kane, p. 107.)

Abraxas grossulariata, L. An almost pure white specimen from Enniskillen was sold with the late Mr. Horne's collection; Rev. F. W. Johnson captured near Poyntzpass a specimen broadly suffused with yellow; a small race occurs on moorlands in Co. Tyrone, the larvae feeding upon ling, *Calluna vulgaris*. (Kane, p. 107.)

***Ligdia adustata**, Schiff. Locally abundant on limestone in East Tyrone, and the late Mr. J. E. R. Allen met with it near Enniskillen. (Kane, p. 107.)

Hybernia aurantiaria, Esp. Four examples at light, Tempo, Co. Fermanagh (Langham); local in birch woods near Cookstown, Co. Tyrone. (Kane, pp. 108 and 163.)

Oporabia autumnaria, Gn. (*Oporabia autumnata*.) First found in numbers and differentiated from *dilutata* by the late Mr. Allen, of Enniskillen; also occurs at Tempo (Langham); and near Cookstown, Co. Tyrone. (Kane, pp. 109 and 163.)

Oporabia christyi, Prout. Found locally near Enniskillen (Allen), at Tempo (Langham), Co. Fermanagh; and near Cookstown, Co. Tyrone. (Kane, p. 163.)

Larentia flavicinctata, Hb. (*Entephria flavicinctata*.) Discovered in Ireland by Mr. Kane in Co. Antrim; and later by Mr. Allen in mountain glens in Co. Fermanagh; the favourite food plant of this species is *Saxifraga aizoides* not *S. hypnoides*. (Kane, p. 163.)

Emmelesia decolorata, Hb. (*Perizoma flavofasciata*.) Locally abundant on the coast of Co. Antrim; Magilligan and near Moneymore, Co. Derry; at Tempo, Co. Fermanagh; and near Cookstown, Co. Tyrone. (Kane, p. 110.)

Emmelesia taeniata, St. (*Perizoma toeniata*.) Found abundantly in the old oak woods at Rathmullan, Co. Donegal, by Mr. D. C. Campbell, of Derry. (Kane, pp. 110 and 163.)

Emmelesia unifasciata, Haw. (*Perizoma bifasciata*.) Found flying in swarms over *Bartsia* near Cookstown by Dr. Harrison, a very singular occurrence, as, according to Barrett and South, the imago is very seldom seen or taken, even at night. Locally abundant as larvae in East Tyrone. (Kane, p. 111.)

Emmelesia adaequata, Bork. (*Perizoma blandiata*.) Apparently rare, Co. Donegal (Johnsen); near Lough Fea, Tyrone. (Kane, p. 111.)

Eupithecia succentaureata, L. (*Eupithecia succenturiata*.) Not uncommon near Grange and Killymoon, Cookstown, Co. Tyrone; the only other locality for this species in the North is Armagh (Johnson). (Kane, p. 111.)

***Eupithecia subfulvata**, Haw. Local, but widely spread in East Tyrone, apparently overlooked in other districts, although Mr. Kane's only records are from the east coast, Co. Wicklow to Co. Louth. (Kane, pp. 112 and 163.)

Eupithecia scabiosata, Bork. Taken by Mr. Allen, near Enniskillen, Co. Fermanagh (Entom. Record, Vol. XXIV, p. 33). (Kane, pp. 112 and 163.)

Eupithecia plumbeolata, Haw. Not common, near Enniskillen, Co. Fermanagh (Allen); and near Lough Fea, Co. Tyrone. (Kane, pp. 112 and 163.)

***Eupithecia pygmaeata**, Hb. Near Enniskillen, Co. Fermanagh (Allen); not uncommon near Grange, and widely distributed in other localities, but not often common in East Tyrone. (Kane, pp. 112 and 164.)

***Eupithecia trisignaria**, H.S. Larvae beaten abundantly by the late Mr. Allen near Enniskillen and a good series bred. (Kane, p. 113.)

Eupithecia virgaureata, Dbl. Widely spread, Co. Donegal (Johnson); Co. Fermanagh, larvae beaten in abundance and series bred, Enniskillen (Allen); Co. Tyrone, larvae on *Solidago Virga-aurea* and ragweed. (Kane, pp. 113 and 164.)

Eupithecia constrictata, Gn. Taken at Armagh (Johnson). (Kane, pp. 114 and 164.)

Eupithecia dodoneata, Gn. Local, but widely distributed, Co. Fermanagh, larvae beaten plentifully from hawthorn and series bred near Enniskillen (Allen); Armagh, imago taken on hawthorn hedge (Johnson); Co. Tyrone, larvae on hawthorn and imago at rest near Stewartstown. (Kane, pp. 115 and 164.)

***Eupithecia togata**, Hb. (*Eucymatoge togata*.) Two examples near Enniskillen (Allen); one at Tempo (Langham), Co. Fermanagh. (Kane, pp. 116 and 164.)

Eupithecia coronata, Hb. (*Chloroclystis coronata*.) Larvae beaten in some abundance from hawthorn bloom in June near Enniskillen, Co. Fermanagh (Allen); widely spread in East Tyrone. (Kane, p. 116.)

Lobophora sexalisata, Hb. Apparently rare, single examples on Lough Erne, Fermanagh (Langham) and near Stewartstown, Tyrone. (Kane, pp. 116 and 164.)

Hypsipetes ruberata, Frr. (*Hydriomena ruberata*.) Local, but not uncommon at Tempo, Co. Fermanagh (Langham), and widely spread in East Tyrone and South Derry. (Kane, p. 118.)

Melanippe unangulata, Haw. (*Xanthorhoë (Euphyia) unangulata*.) Of this species Mr. Kane says, "very local and uncommon"; it has most probably been overlooked formerly or allowed to pass as *M. sociata* (*Xanthorhoë (Epirrhoë) sociata*); in East Tyrone it is locally abundant and widely distributed. (Kane, p. 121.)

Phibalapteryx lapidata, Hb. This northern species was discovered by the late Mr. Allen on the slopes of a mountain near Enniskillen, Co. Fermanagh, and was again taken in the same locality in some numbers by Sir C. Langham. It is a very sluggish insect and easily overlooked. (Kane, p. 126.)

Triphosa dubitata, L. Taken singly at Tempo, Co. Fermanagh; and near Stewartstown, Co. Tyrone. (Kane, p. 127.)

Cidaria miata, L. Kane states that this species is usually commoner than *C. siterata*; in Cos. Fermanagh and Tyrone it is decidedly rare and much less frequently met with than *C. siterata*. (Kane, p. 127.)

Chesias spartiata, Fues. Locally abundant among broom in Cos. Fermanagh (Tempo) and Tyrone, near Stewartstown and Cookstown. (Kane, p. 131.)

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In accordance with resolution passed at General Meeting held on 28th April, 1911, the following reductions have been made in the prices of Proceedings, &c., to Members of the Club. When the stock has been sufficiently reduced prices will be raised again.

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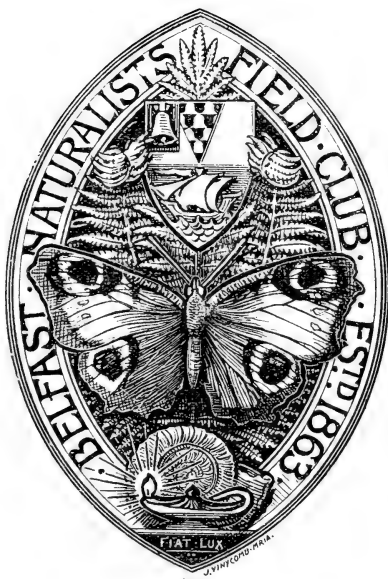
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1923-24
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PROCEEDINGS
AND ANNUAL REPORT
OF THE
BELFAST NATURALISTS'
FIELD CLUB,

For the Year Ending 31st March, 1924

(SIXTY-FIRST YEAR)

SERIES II.

VOLUME VIII.



PART VI-VII,

1923-24.



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PROCEEDINGS.

SUMMER SESSION.

THE BLACK MOUNTAIN.

Date—19th May, 1923. Conductor—Robert Bell.
Number present, 45.

Members assembled at the front entrance to Woodvale Park at 2-30 p.m. for the two mile tramp up the Ballygomartin Road. Mr. Bell led the party to the site of the prehistoric flint factory which he investigated recently. It lies on the east side of the hill at an elevation of about eight hundred feet. Two areas have been carefully dug over, and have yielded a large number of flint flakes. They occur in a matrix of brown earth, which results from the decomposition of the overlying basalt and chalk rubble, and are found at all depths down to three or four feet. Mr. Bell explained the geological features of the neighbourhood, and at the first section Mr. Bennett gave a short talk. Members got to work with hammers and pocket picks, some with walking and umbrella sticks, and soon unearthed quite a considerable number of specimens.

The botanists disappeared up gorges and gullies, and were with difficulty detached from the mountain for the homeward journey. Few plants of special interest were noted. The following, however, may be mentioned:—Wall Cress (*Sisymbrium thalianum*); of the Mosses, *Orthotrichum saxatile*, *Tortula ruralis* (with old fruit), *Trichostomum tortuosum*, *Tortula subulata*, and the rare and local *Grimmia pruinosa*.

At a short business meeting (Rev. W. R. Megaw, B.A., presiding) nine ordinary and seven junior members were elected.

MURLOUGH BAY.

Date—2nd June, 1924. Conductor—R. J. Welch, M.R.I.A.
Number present, 97.

The journey was made by motor coach, leaving Belfast at 8-40 a.m., and proceeding via Larne and the Coast Road. The conductor for the day gave short lectures at various points on the journey, pointing out that the route lay over almost all the important geological formations, from the

more recent estuarine clay, raised beaches and older estuarine deposits of Belfast and Larne Loughs past the Mesozoic chalk cliffs of the Coast Road to the Palaeozoic carboniferous sandstone and much older schistose rocks of Murlough itself.

Members of the Route Club from Coleraine, Bushmills and Ballintoy, and some naturalist visitors from Ballycastle, Ballymena, and Larne joined the party.

At the marine potholes near the cottage the conductor gave a short description of the geology of the bay, pointing out quite close at hand the division between the carboniferous rocks and the ancient schists of Binvane on the one side, and the volcanic dykes and great intrusive mass of Fair Head, penetrating carboniferous strata, on the other.

Tea was served in the Antrim Arms Hotel, Ballycastle, and at the business meeting afterwards (the President, Mr. J. A. Sidney Stendall, M.B.O.U., in the chair) nine new members were elected.

SLEMISH AND DISTRICT.

Date—16th June. Conductor—Joseph Skillen.
Number present, 62.

The journey was made by motor coach, leaving Belfast at 9-30 a.m., and proceeding via Antrim, Ballymena, and Broughshane. At Broughshane a halt was made to visit the grave of the Rev. Canon Grainger, an original member of the Club and its first chairman.

The ascent of the mountain was made from Mr. Montgomery's farm at the north-eastern base. The conductor pointed out that Slemish is the weathered-out neck of an extinct volcano, rising to a height of 1,437 feet. Nearly all the members of the party reached the summit, from which a never-to-be-forgotten view of the Braid valley, and far beyond, was obtained. The dark hills of Scotland on one side, and the silver sheen of Lough Neagh on the other were clearly discernible.

At Broughshane the rare grasses *Poa nemoralis* and *Trisetum flavescens* were gathered. On the slopes of Slemish the Sweet-scented Orchis (*Gymnadenia conopsea*) and the common Butterwort (*Pinguicula vulgaris*) were admired. Of the Sedges (*Carices*) the following were noted: *dioica*, *glauca*, *panicca*, *praecox*, *pilulifera*, and *flava*. Slemish is specially rich in mosses, and during a somewhat hurried

search the following interesting species were found: *Plagiothecium silvaticum* (in fruit), *P. undulatum*, *Hypnum revolvens*, *H. scorpioides*, *Dicranella squarrosa*, *Dicranum majus*, and *Grimmia funalis*. On the return journey the Water Avens (*Geum rivale*) made a fine show on both sides of the road between the mountain and Crebilly.

The coaches passed through the grounds of Crebilly House, the ancient seat of the O'Haras. The stone circle and kistvaen at Ballymarlow, discovered in 1898 by the conductor, were inspected. Reaching Ballymena, the party had tea in Whiteside's Hotel, followed by a business meeting (Rev. W. R. Megaw, B.A., in the chair), when seventeen ordinary and three junior members were elected. The only stop on the way home, via Kells, Connor, and Parkgate, was at Kells Abbey, of which only the western gable is standing. Close by is the desecrated burial vault of the O'Haras, now apparently used as a fowlhouse!

MONLOUGH.

Date—30th June. Conductor—J. A. S. Stendall, M.B.O.U.
Number present, 32.

The journey was made by motor coach, leaving the Museum, College Square North, at 2 p.m. The shores of Monlough were found to be richly clothed with marsh-loving plants, and the botanists were soon busy hunting for their treasures. They found the Marsh Speedwell (*Veronica scutellata*), Buckbean (*Menyanthes trifoliata*), Marsh Cinquefoil (*Potentilla palustris*), Bladder Carex (*Carex vesicaria*) and the Slender-beaked Bladder Carex (*Carex ampullacea*).

The zoologists were not so fortunate, as owing to a recent spell of dry weather, the drains had practically dried up, thus preventing any work being done in the freshwater fauna. They were, however, rewarded by being able to observe an abundance of bird life, which included snipe, wild duck, teal, reed-bunting, stonechat, &c. A snipe's nest was found containing four eggs, and the nest of a sandpiper with empty shells only. A young lapwing, as yet unable to fly, was seen strutting about on the edge of the lake with apparent unconcern, while a quiet "plop" in the water told of the presence of the little grebe or dab-chick, its nest being afterwards found.

After an alfresco tea in Mr. M'Williams' garden, the party proceeded (by kind permission of the Belfast Co-operative Society) through Tullygirvan Glen. By the side of the lakelet at the head of the glen the Lesser Marsh-wort (*Helosciadium inundatum*) was found in quantity, while along the glen itself honeysuckle and foxglove grew in profusion.

After a walk of about a mile Ballygowan Railway Station was reached, from which the return journey to town was made.

LOUGHINISLAND AND SEAFORDE.

Date—21st July. Conductor—S. M. Macoun.
Number present, 53.

Members left town by motor coach at 9-30 a.m. via Saintfield, Crossgar and Kilmore. The dolmen at the Buck's Head, Annadorn, was inspected on the way. At Loughinisland Mr. R. W. H. Blackwood, J.P., joined the party and acted as local conductor for this area and Seaforde, pointing out the various features of interest, and telling the history of the parish generally. He mentioned that Macartan's Chapel, the smallest of the three churches, measures about 27ft. by 20ft. Some old writers state that it was originally the cell of St. Finian. The most striking feature is the low western doorway of Castle Espie limestone, with square pilasters supporting a semi-circular arch of two stones; on the left spandrel the letters "P.M.C." are carved, on the right the date 1636.

The zoologists found a few interesting fresh-water shells, one, *Planorbis carinatus*, being very local and rare in N.E. Ireland, in its typical form, and some *Zonitoides nitidus* in the marsh. Spiders were abundant, running about with their white egg-sacs.

The botanists collected fine specimens of the House-Leek near the shore of the lake, with the Bur Marigold, three *Charas*, *Elatine hexandra*, *Typha latifolia*, *Arundo phragmites*, some specimens of the Black Spleenwort fern, and very tall Water Dock, measuring over six feet high.

Going on to Seaforde demesne (by kind permission of Mrs. Forde), Mr. Blackwood conducted the party through fine woods past the smaller lake to the garden, where most interesting shrubs and cultivated native plants were noted. A tall Florencecourt yew, up which *Tropaeolum* was growing in profusion, was admired. A great *Gunnera manicata*, with its seven-foot leaves, was seen in a damp hollow. The

rock garden was also visited. Leaving the demesne by the main entrance, the church, 200 years old, was inspected, and the party proceeded to Drumcaw, where Mr. S. Burke, J.P., led the way to the cairn and stone cist on his farm.

On reaching Downpatrick tea was served in Denver's Hotel, and at the business meeting afterwards (Mr. F. A. Heron, D.L., in the chair) eight ordinary and four junior members were elected.

CARRICKFERGUS DISTRICT.

Date—11th August. Conductors—T. Edens Osborne, F.R.S.A.Ire.,
and George C. Reilly, A.M.I.Min.E.
Number present, 65.

Members travelled by train leaving Belfast at 2 o'clock. Motor coaches conveyed them from Carrickfergus to Dun-cruie Fort, where Mr. Reilly gave a racy and lucid talk on the antiquities of the neighbourhood. The name of the fort he explained as either *Dun-cruadh*, the hard hill or *Dun-ruadh*, the red hill. The moat which surrounded the mound is now, for the most part, filled in. The adjoining ruins of Killyann Church (the church of the river) were visited. Nothing remains except a portion of the west wall. Mr. Reilly was of opinion that it was a chapel of ease in connexion with the priory at Carrickfergus, though local tradition traces it back to the time of St. Patrick.

Returning to the road, the motors brought the party to the "Commons Farm" dining hall, where tea was partaken of. After tea a short business meeting was held (Mr. R. S. Lepper, M.A., presiding), when several new members were elected, and Mr. Robert Bell gave a brief address on the geological features of Woodburn district, pointing out that the river had cut a deep channel below the level of the surrounding country, and in this channel are exposed in turn sections of the different geological strata of Co. Antrim.

By special permission of the Belfast City and District Water Commissioners their works were then visited, Mr. Reilly explaining the sources and methods of supply. From the lower entrance to the Waterworks a short walk brought the party to Carrickfergus, where the Rev. Canon M'Neice, M.A., B.D., was waiting at the parish church of St. Nicholas to welcome them. In the course of an address on the history of the ancient town and church, Canon M'Neice made the interesting suggestion that it was probably within the walls of St. Nicholas' Church that the first regular Presbytery held in Ireland met on 10th June, 1642.

CUSHENDUN, CUSHENDALL AND GLENARIFF.

Date—1st September. Conductor—S. M. Macoun.
Number present, 63.

Leaving Belfast at 8-30, the route was by Ballynure, Larne and the Coast Road, where at Waterloo the Liassic fossil beds on the shore were pointed out. Round Garron Point were seen the fine mural basaltic cliffs, the home of the Golden Rod and other rock plants. Passing Red Bay dunes, fine views of Glenariff were obtained, and soon the party were through Cushendall and on their way up Glencorp to Glendun. Tiveragh, a good example of a "volcanic neck," was passed close at hand. At Glенаan the site of Ossian's grave was pointed out, and Tievebullagh Mountain, where Mr. W. J. Knowles, M.R.I.A., discovered a prehistoric stone-axe factory.

A stop was made at the Viaduct for lunch, and the botanists noted eight species of ferns, masses of the sweet mountain fern, a local fern abundant in Glendun, and some good specimens of the black spleenwort. Descending to the lower road, "the altar in the woods," an old hillside altar of the penal days, on the margin of Inispollan Wood was visited. The next stop was at Cara Castle, from which the party climbed up to Shane O'Neill's Cairn, where a magnificent view of the coast and the glen country to the south was obtained. Coming down again, a short walk along the shore brought the party to the "Pudding-stone" (old red sandstone conglomerate) Caves, one of which is the avenue through the cliffs to the residence of Dr. Moore.

Returning again through Cushendall, the Tea House at Glenariff was reached and a welcome meal was enjoyed. At the short business meeting after tea (Rev. W. R. Megaw, B.A., in the chair) several new members were elected. The party then walked up the Glen, in which the zoologists collected *Arianta arbustorum*, a local land shell, among the Wood Rush along the path, and some *Helix fusca*, which occurs here occasionally, and always among the same plant.

The journey home was made from the Parkmore entrance via Ballymena and Antrim.

NENDRUM.

Date—8th September. Conductors—R. J. Welch, M.R.I.A.,
and S. M. Macoun. Number present, 40.

The party proceeded by the 2 p.m. train to Comber, and thence to Mahee Island by motor coaches and cars. Mr. H. C. Lawlor, M.R.I.A., who carried out the recent

investigations among the ruins of the ancient monastery. was present, and acted as guide. Commencing at the site of the western entrance to the outer cashel wall, near the primitive quay used by the monks and their visitors, he conducted the party to the north side, where the outer cashel wall has now been restored. He stated that the wall in its original state was half a mile in circumference and nine feet in thickness. Other buildings inspected included the artisans' workshops, where crucibles, bronzes, brooches, and pins, and polishing stones had been found. The most interesting site, however, was that of the rectangular school-house, inside the second cashel on the west side. The débris here found proved that the building had been burned, remains of the roof timber and nails had been found in quantity, with doorhandle, &c. The slates were also found, with their headlines which the pupils copied with iron pencils.

After tea, Mr. David Elliott, B.A., presided at a business meeting for the election of members.

DUNDRUM SANDHILLS.

Date—15th September. Conductors—Robert Bell and
R. J. Welch, M.R.I.A. Number present, 92.

Members travelled to Dundrum in reserved compartments of the 1.45 p.m. train. Passing along between two hedges of Sea Buckthorn, some of it showing fine masses of fruit, the party were soon on the sites known for generations as a collecting ground for various kinds of stone implements. Many fine specimens rewarded the searchers.

The botanists found some interesting plants in the dunes or along the shore, such as the Oyster Plant, the Sea Beet and a very rare local Geranium.

After tea in the Commercial Hotel, a short business meeting was held (Mr. David Elliott, B.A., presiding) when seven ordinary members and one junior member were elected. The return to town was made by the 7.7 train.

PURDYSBURN GLEN.

Date—29th September. Conductor—Arthur Deane, M.R.I.A., F.R.S.E.
Number present, 57.

This field meeting was in the nature of a "Fungus Foray."

On reaching the Glen Mr. Deane gave a short account of the life history of fungi and their place in nature's economy. Some interesting species were found, particularly among the gill-bearing class, such as the Sulphur Tuft, Ink-caps, Prickly Cap, the Oyster of the Woods, the Honey Agaric, and the Scarlet Fly-cap, but perhaps the most interesting were the Slime-fungi (*Myxomycetes*), which during part of their life-history partake much of the nature of animals, due to their amœba-like movements and method of feeding, while at a later period they are more akin to plants in forming spores. For this reason the position of the group has been long debated.

After an active search for fungi and an enjoyable afternoon spent in the woods, a business meeting was held (Rev. W. R. Megaw, B.A., presiding), and eleven new members were elected.



WINTER SESSION.

The authors of the Papers of which abstracts are given are alone responsible for the views expressed therein.

CONVERSAZIONE.

The Winter Session opened with a *Conversazione* held in the Assembly Hall, Fisherwick Place, on Tuesday, 23rd October, at which there was a very large attendance of members and friends. Tea was served from 7 to 8 p.m.

The exhibits included a fine collection of Natural History objects from Rathlin Island, lent by the President, Mr. S. A. Bennett, Capt. Chase, and Messrs. J. A. Moffatt, James Orr, T. Edens Osborne, and H. C. Scott.

The Municipal Museum had on view preparations illustrating Protective Resemblance, Models of Slide and Wheel Cars, cases illustrating the Trap-door Spider and the Bird-eating Spider, and models of Carnivorous Plants.

Botany.—Mr. Nevin H. Foster had a fine exhibit of fronds of the varieties *corymbiferum*, *setigerum*, *Frizellac*, *Howardii*, *depauperatum*, *cruciato-cristatum*, *angustifrons* and *pulcherrimum* of the Lady Fern, *Athyrium Filix-foemina*; and of the varieties *plumosum*, *acutilobum*, *divisilobum*, *tripinnatum*, *setosum* and *decompositum-frondosum* of the Soft Shield Fern, *Aspidium angulare*; Mr. R. J. Welch, Fern panels; Mr. N. Carrothers, *Equisetum trachyodon* from Colin Glen, and a few herbarium specimens; Mr. E. Norman Carrothers, a collection of freshly-gathered Fungi; Rev. W. R. Megaw, British and foreign mosses; Mr. S. A. Bennett, *Hypochaeris glabra* from its Magilligan station, and a series of aquatic plants of North-East Ireland; Capt. Chase, the Bee Orchis from Co. Antrim, and some aliens from England, and Mrs. Gibson, an album of New Zealand ferns.

Archaeology.—Mr. Robert Bell, flint implements from Black Mountain; Mr. Joseph Skillen, rough stone axes from Tievebullagh, and flint axes and polished stone axes from other parts of Co. Antrim; Mr. T. Edens Osborne, fragments of pottery and an anvil stone and hammer-stone from Dundrum sandhills, Co. Down; a flint knife from Egypt, and

oolithic implements from Medway district; Mr. E. Burling, a carved stone from Glastonbury; Miss Joan Loewenthal, flint scrapers from Whitepark Bay; and Mr. Ronald H. Crawford, a set of hollow flint scrapers from Dundrum, Co. Down.

Geology.—Mr. Robert Bell, types of *Rostellaria carinala* from Co. Antrim; Mr. A. M'I. Cleland, ammonites (cut and polished) from Liassic beds, Whitby, Yorkshire; the growth of coal from peat to anthracite, carboniferous minerals, chalcedony from Carnmoney, specimens from Upper Ludlow-Bone-bed, Norton, Salop; and orthoceras from boulder drift, Ormeau Road, Belfast; Mrs. A. M'I. Cleland, trilobites from Tremadoc, Caradoc and Wenlock beds, neighbourhood of Church Stretton, Salop.

Zoology.—Mr. R. J. Welch, woodland species of land shells, freshwater pearl mussel shells (some from Ulster rivers); Mr. A. M'I. Cleland, swan mussels from canal near Wem, Salop; Miss Blackwood, collection of marine shells; Mr. James Orr, living reptiles and batrachians, and marine shells; Miss M'Clure, a wasps' nest; Prof. Gregg Wilson, examples of protective resemblance; and Mr. W. M. Crawford, French butterflies.

Miscroscopy.—Mr. D. J. Carpenter, geology; The President, the Felted-Beech Coccus (*Cryptococcus fagi*), a species new to Ireland; and Prof. Gregg Wilson, living and other exhibits.

Photography.—Mr. T. Edens Osborne, Club Excursions, 1923; Mrs. A. A. Campbell, Club Excursions, 1922 and 1923, and a typical Co. Down farm kitchen; Mr. Herbert C. Scott, local birds' nests; Mr. W. A. Green, Irish scenery (coloured); and Mrs. M'Cloy, the mediæval fortified town of Carcassone, France.

Miscellaneous.—Mr. S. M. Macoun, curios; Mr. W. M. Crawford, Indian art objects; Miss Mawdsley, memorial brooches chains, etc., and some rare books; Mr. A. Albert Campbell, ex-libris (natural history and heraldic); Mr. Hans Iten, oil paintings; The President, portion of original oak beam from "God's Providence House," the only house in Chester unvisited by the Great Plague; and Mr. T. Edens Osborne, the book-case of David Garrick, the celebrated actor, sold with his effects in 1823.

At 9-15 a business meeting was held. The President expressed his pleasure at the large attendance, and paid a tribute to the honorary officials who had done so much to promote the work of the Club during the past season. The Club was now the largest of its kind in the British Isles. It recently had been honoured in one of its members, Mr. R. J. Welch, who had received the honorary degree of Master of Science from the Queen's University of Belfast, and who was President for the year of the Conchological Society of Great Britain and Ireland, the premier Conchological Society of the world.

The following junior members were awarded prizes in connexion with the Summer Programme:—(1) President's Prize, Master T. M. Megaw for mounted collection of Irish grasses; (2) Miss Blackwood's Prize, Master R. H. Crawford for mounted collection of Irish ferns; Dr. Deans' Prize for best set of Natural History Photographs, Master M. P. Crawford.

The Conversazione Prizes for junior members were awarded as follows:—For best living botanical exhibit—(1) Miss Nora Stendall, (2) Master R. H. Crawford; for best living zoological exhibit—(1) Miss Nora Stendall, (2) Master W. P. Crawford; for best exhibit of fossils or minerals—(1) Master T. M. Megaw, (2) Master R. H. Crawford.

A lantern display, in charge of Mr. R. J. Welch, of pictures of the summer field meetings concluded the proceedings.

THE CLUB AND ITS FUTURE.

The first ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday, 27th November, when the President (Mr. J. A. Sidney Stendall. M.B.O.U.) delivered the inaugural address.

He said he wished to put before the members a number of points on the work and working of the Club, in the hope that something beneficial might be the outcome. Being a Museum man and recognising that Museum work was intimately connected with Field Club work, they would naturally expect from him, first of all, some account of the course Museum events were taking in the city. That Northern Ireland should be proud of its Museum connexions was undoubted, for did not Co. Down give to Britain the man—Sir Hans Sloane—who laid the foundations of what was probably the finest institution of its kind in the world—the

British Museum. Sloane died in 1753, and sixty-eight years elapsed before any serious effort was made to provide his native province with a public Museum. In 1821 the first steps were taken, when the Belfast Natural History and Philosophical Society was founded. In the course of its activities a considerable amount of material was collected, which ultimately gave rise to the idea of forming a Museum, and so in 1831 the building in which they were met was erected. Of the early members of the Society the most noteworthy was William Thompson, whose great work—"The Natural History of Ireland"—stood as his everlasting memorial. Natural history objects collected by him still existed, many of them of extreme importance and rarity. Thompson and his contemporary naturalists were pioneers, big-hearted men and women with little to guide them, but with a will to do.

The Museum in course of erection in the Botanic Gardens Park would in two or three years' time house the collections of science and art belonging to the citizens of Belfast. In that building room would be available for the exhibition of specimens and objects on a scale previously impossible owing to lack of proper accommodation. They would be able to study the things they were most interested in, and to learn something of other things which they might have heard a good deal about, but had not an opportunity of examining sufficiently to start them on the way to their systematic study.

The foundation of our present Municipal Collection was laid by our first President (or chairman, as he was then called) in 1863, viz. : the late Canon Grainger, who, in 1891, presented to the city his gatherings of a lifetime. From 1891 onwards progress was made in acquiring objects, mainly of Art and Ethnography, but it was not until 1910 that the city could claim to possess any Natural History specimens worth mention. In that year the Belfast Natural History and Philosophical Society formally handed over to the city all its magnificent collections practically as an unconditional gift, a gift that had not yet been fully appreciated, and could not be until it was properly housed and exhibited. Included were the celebrated collections of James M'Adam, William Thompson, G. C. Hyndman. Ralph Tate (our founder), William Gray, Hugh Robinson. S. A. Stewart, and Joseph Wright, all, with the exception of the first two, leading members of our Club, together with important contributions from such present-day members as

William Swanston, Nevin H. Foster, and Robert J. Welch. In Antiquities, the collection presented by George Benn in 1880 was particularly rich in relics of prehistoric man in Ireland.

But much work still required to be done. Gaps needed filling and new groups required working up, and this was where the members of the Field Club could be of considerable use. For example, the Museum should contain at least one specimen of every rock, mineral, fossil, plant and animal occurring in Northern Ireland. Notwithstanding our present largely increased membership the number of *active* members of the Club had seriously diminished. True, we had with us men and women who had done admirable work in the past, and were still doing so, but those of the younger school seriously engaged in the systematic study of any one group could be almost counted on one's fingers. For those sufficiently interested to take up a subject, probably the best method to adopt was what he would call the "competitive" method, viz. : for at least three persons to commence on one particular line of study, and work either independently or collectively, but in any case they should meet frequently to compare notes. His experience was that the petty jealousies which were apt to mar many intellectual pursuits were non-existent in Field Club work. A spirit of brotherhood sprang up between workers; they wrangled in a good-natured way, but should one possess himself of a treasure, the fact acted as a stimulus to the others, making them wish to go one better, but never created ill-feeling.

Turning to the working of the Club, he suggested that to encourage the active members a Bronze Medal should be awarded annually to a member of not less than ten years' membership, for outstanding work in connexion with the Club's activities. Given for distinguished services, it would be a tangible recognition of supreme merit.

Another matter he wished to mention was that the rapidly increasing membership of the Club was becoming a rather embarrassing problem for the officials, who found the utmost difficulty in keeping abreast of their work. He suggested that the ordinary membership should be limited to, say, six hundred, new members to be elected in priority of application as vacancies occurred, always allowing for the automatic transfer of junior members to ordinary membership. He suggested further that the entrance fee should be re-imposed,

In conclusion, he recommended the reconstitution of the Sections of the Club, with their own field meetings, as it would, he believed, conduce to more *real field work* being done.

An interesting discussion followed, which was taken part in by Messrs. S. A. Bennett, B.A., B.Sc.; R. J. Welch, M.Sc., M.R.I.A.; J. R. H. Greeves, B.Sc.; S. M. Macoun, and Rev. W. R. Megaw, B.A., and Professor Charlesworth, D.Sc., M.R.I.A., each of whom warmly congratulated the President on the constructive policy outlined in his address.

THE ROMANS IN BRITAIN: HADRIAN'S WALL.

The second ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday, 18th December, when Mr. Joseph Skillen gave a lecture on above subject. The President (Mr. J. A. Sidney Stendall, M.B.O.U.) occupied the chair.

Before speaking of Hadrian's Wall, Mr. Skillen dealt briefly with the coming of the Romans to Britain which Gibbon said was after a search for pearls, but which was more likely from a lust of conquest and a desire, dear to every Emperor's heart, for a Roman triumph. Hadrian's Wall, stretching from Carlisle to Newcastle-on-Tyne, was described by Dr. Henderson, author of the "Life of Hadrian," as the greatest frontier fortress left by that Emperor. Its original height was 30 feet, and it was garrisoned by 1,800 men, chiefly auxiliaries officered by Romans. The wall and its defences, including the fosse to the north, the vallum and its earthworks, with the Roman roads, were described. The three Roman camps out of the twenty-three which were the best preserved on the Wall to-day were Cilurnum (Chollerford), Borcovicus (Housesteads), and Amboglanna (Birdoswald). The interesting antiquarian discoveries made at these camps were now preserved at the Clayton Museum, Chollerford. On the Wall was discovered a well dedicated to the goddess Conventina (unknown in the pantheon of the ancient Britons or the Romans) in which were found 16,000 Roman coins, bronze, silver and gold, dating from B.C. 61 to A.D. 367. The lecture was well illustrated by a fine series of lantern views.

The President, and Messrs. A. M'I. Cleland, John Holness, and B. Murray took part in the discussion which followed.

SOME COMMON OBJECTS OF THE SEASHORE.

The third ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday, 15th January, 1924, when Mr. D. J. Carpenter, A.R.C.Sc.L., delivered a lecture on above subject. The President (Mr. J. A. Sidney Stendall, M.B.O.U.) occupied the chair.

The lecturer first dealt with the two great classes of common shell-fish or mollusks—the gastropods and lamelibranchs—giving an account of each type of animal and its shelly abode. He pointed out that some of the first classes were vegetarians, while some were carnivorous, and all had numerous enemies such as the cod, catfish, flounder, sole, gulls, starfish, etc. The interesting characters and habits of many common shellfish, including the limpet, razor-shell, piddock, shipworm, etc., were described. It was shown that other shelly objects (*spirorbis* and *serpula*) found on seaweed, stones, piers, shells, etc., were the homes, not of mollusks, but of seaworms which had created these limey abodes as a protection against their enemies. The sea anemone was dealt with, and the structure of the animal, and its habits were explained, especially how it paralysed its prey by means of sting cells. A brief description of the common starfish was given, and interesting reference made to the sea-urchins. The lecture was fully illustrated by lantern slides.

The short discussion at the close was taken part in by the President, Rev. W. R. Megaw, B.A., and Messrs. R. J. Welch, M.Sc., M.R.I.A., and A. M'I. Cleland.

THE BRITISH GULLS, TERNS AND SKUAS.*

The fourth ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday, 29th January, when Mr. Nevin H. Foster, F.L.S., M.R.I.A., M.B.O.U., delivered a lecture on above subject. The President (Mr. J. A. S. Stendall, M.B.O.U.) was in the chair. Mr. Foster said—In the modern system of classification Gulls, Terns and Skuas compose an Order of Birds—**Lariformes**. By Howard Saunders these birds were all referred to a single Family—**Laridæ**, with three sub-families; whilst Bowdler Sharpe regarded the Skuas as worthy of Family rank which he designated **Stercorariidæ**, restricting the **Laridæ** Family to the Gulls and Terns, to

*The nomenclature adopted in this Paper is that of the B.O.U., "List of British Birds, 2nd ed., 1915,"

which he assigned the sub-Family names of **Larinæ** and **Sterninæ**. Without doubt the three sections of the Order **Lariformes** are very closely allied as regards their structure. It is only a matter of opinion what amount of difference should constitute the right to separate two closely related birds into distinct species; and the same holds true (in a less degree) as to the features sufficient to separate birds generically or into Families or Orders. By whatever title however we may consider them, these three groups all possess characters, external and internal, which indicate (in the not very remote past) a common ancestor, as well as a close affinity to the Order of the Snipes and Plovers; but the **Lariformes** differ from the **Charadriiformes** in the possession of webbed feet, and in the fact that whilst among the Snipes and Plovers the normal number of eggs in a clutch is four, the egg clutch of the Gulls and Terns only exceptionally exceeds three, and is frequently, as also obtains in the Skuas, only two. Another striking difference is presented in the nestling stage, for whilst the young Snipe or Plover is capable of running about almost immediately after its emergence from the shell, the chicks of the Gulls and Terns, though well clothed with down, are for a time comparatively helpless and do not leave the nest until partly feathered. The internal structure of Gulls and Terns shows little divergence, both have two notches on the posterior margin of the sternum, whereas in the Skuas there is but one notch. With regard to external differences, the bill in the Tern has its two constituents—mandible and maxilla—about equal in length, differing from the form of bill in the Gulls and Skuas, which resemble each other in that the mandible (lower jaw) is shorter and permits the apex of the maxilla to project downwards over and in front of its extremity. The feet of Gulls and Terns differ from those of Skuas in having comparatively feeble claws, whereas in the latter these claws are strongly curved and sharp, resembling those of Birds of Prey. The following readily observable differences (at least so far as our common British species are concerned) may serve to distinguish between the three groups:—Gulls have fan-shaped tails (exceptions being one with wedge-shaped and one with forked tail, but both these are rare visitors); Terns have deeply forked tails; whilst in the Skuas the middle pair of tail feathers project from half an inch to nine inches beyond the others. In their food-procuring methods also the three groups vary:—Gulls are surface feeders, Terns (whilst they cannot be said

to dive) procure their food by plunging the head below the water surface (the Marsh Terns pursue and capture insects on the wing); and the Skuas obtain their food mainly by parasitic methods. During the breeding season when the Skuas are inland they capture insects, frogs and small mammals and even consume berries. In all three birds some of the contour feathers are furnished with aftershfts.

Seventeen species of Gulls are admitted to the British List—the American **Laughing Gull**, *Larus atricilla* Lin., was, according to Saunders, included in the list in error by Montagu, and is consequently now excluded.

(1) **The Common Gull**, *Larus canus* Lin., was so named by the great Swedish naturalist Linné; but in this country, though not uncommon, it is far out-numbered by several other species. This bird is not known to nest in England, but in Scotland and Ireland it breeds in a few inland localities as well as on coastal cliffs. In a nesting colony of Common and Herring-Gulls on a cliff in Co. Donegal a difference of deportment in the young was noted by Mr. D. C. Campbell and myself. The nestlings were evidently disturbed by our presence above them, and the Common Gulls stood up defiantly in their nests while the Herring-Gull chicks crouched down motionless, evidently trusting to their protective coloration to preserve them from the supposed danger. In winter the Common Gull may often be seen feeding in the fields and following the plough, its white head at this season being streaked with grey. In flight the Common Gull's wings appear more rounded than those of other gulls, and it is much more addicted to soaring or gliding in circles.

(2) **The Herring-Gull**, *L. argentatus* Pontoppidan, is probably (with the possible exception of the Black-headed) the most numerous of our Gulls. In autumn and winter and less frequently also in spring and summer it frequents inland fields in considerable flocks, many of the birds being in different stages of their immature plumage, for in this species the mature plumage is not attained till the third or fourth year. It nests in colonies mainly on coastal cliffs, but a single inland breeding station each in England and Scotland has been found, and a small nesting colony was discovered by the side of a lake on the Co. Antrim plateau some three miles from the coast in 1902, but visits paid to the place in the two succeeding years proved it to have been abandoned. The eggs present great variation both in size and coloration, the ground colour ranging from pale to dark

stone-colour, buff, olive, or even bluish-white; spotted and blotched with many shades of brown and lilac, and occasionally almost or altogether spotless. The average size of 234 eggs from a single breeding colony in one year was found to be 69.21 x 48.24 millimetres, varying in length from 62.23 to 79.98 mm. in length and 43.18 to 52.07 mm. in breadth. A series of photographs of the nests in this colony was exhibited, some of them showing the protective coloration of the young birds.

(3) **The Yellow-legged Herring-Gull**, *L. cachinnans* Pallas, has only once been obtained in the British Islands in Norfolk in 1886, but another is said to have been seen at Dover in 1904. It breeds in the Azores, Canaries, Madeiras and in the Mediterranean region.

(4) **The Great Black-backed Gull**, *L. marinus* Lin., is the largest of our resident gulls—a most rapacious bird and a great robber, for besides its natural food of fish, crustaceans, &c., it devours eggs and young birds, and will attack a sickly lamb or even a sheep. Like the preceding species its nests are usually in cliffs by the coast and its eggs resemble those of the Herring-Gull in colour, but are larger, averaging about 75 x 52 mm. In Ulster this bird has only been known to breed in the counties of Antrim and Donegal, but recently its nest has been seen in Co. Down.

(5) **The Lesser Black-backed Gull**, *L. fuscus* Lin., has been observed in the Shetland Islands and the Firth of Forth in Scotland, but it has probably frequently occurred being passed over as the following species.

(6) **The British Lesser Black-backed Gull**, *L. fuscus affinis* Reinhardt, has recently been separated from its continental congener from which it is distinguished by the lighter colour of the mantle, as well as by differences in the bill and wing measurements, about the latter feature however there is some doubt, as overlapping frequently occurs. Its nest is usually to be found on sea-cliffs and marine islands, but it also resorts to inland situations and considerable numbers breed by lakes and on the moorland bogs of the Co. Antrim plateau.

(7) **The Glaucous Gull**, *L. glaucus* Brünnich, is an Arctic species nesting in circum-polar regions. To the British Islands it is a winter visitor to the northern parts, being annually seen on the northern and western coasts of Ireland. "The Burgomaster," as this large Gull is often called, is a rapacious and carnivorous species, robbing other

Gulls of their prey, and feeding on offal, crustaceans, young birds and eggs. In point of size it is only exceeded among British Gulls, and that but slightly, by the Great Black-backed Gull.

(8) **The Iceland Gull**, *L. leucopterus* Faber, like the preceding species, is only known to us as a winter visitant. In colour it resembles the Glaucous Gull, but is a much smaller bird. Its wing, however, is proportionally longer than that of its relative—the wing, when the bird is at rest, projecting beyond the end of the tail, whilst in the Glaucous the point of the wing does not reach to the extremity of the tail.

(9) **The Great Black-headed Gull**, *L. ichthyaëtus* Pallas, breeds in South-Eastern Europe and Central Asia. It is admitted to the British list on the strength of one specimen obtained at Exmouth in 1859.

(10) **The Mediterranean Black-headed Gull**, *L. melanocephalus* Temminck, is, as its trivial name implies, an inhabitant of the Mediterranean region, whence it extends to the Black Sea and is said to have nested in Hungary. Four examples have been obtained in England, viz., Sussex, 1866; Norfolk, 1886; Yorkshire, 1859; and Kent, 1913. Two are also stated to have been taken in Cornwall in 1851, but the evidence concerning them is not regarded as satisfactory. This bird resembles our Black-headed Gull, but is slightly smaller, and its head in the breeding season is black—not brown as obtains in our common species.

(11) **Bonaparte's Gull**, *L. philadelphia* (Ord.), is a North American species which has been obtained four times in England, once in Scotland, and once in Ireland on 1st February, 1848, on the Co. Down side of the River Lagan between the Ormeau Bridge and the Botanic Gardens. This specimen passed with the Belfast Natural History and Philosophical Society's collection to the Municipal Museum, where it is still preserved. Outside the British Islands Bonaparte's Gull has only been once observed in Europe, viz., Heligoland in 1845. Unlike other Gulls this species, instead of nesting on the ground, makes its nest on the branches of trees, usually Spruce Firs, from four to twenty feet above the ground.

(12) **The Black-headed Gull**, *L. ridibundus* Lin. The trivial name given to this bird is misleading, as at no time is its head black. About the month of February both males

and females (for in all the Gulls the plumage of the sexes are alike) assume a chocolate-brown hood which is worn for some three or four months. After this period till the ensuing spring the colour of the head is white, except for a small dusky spot in front of the eye and another greyish spot behind the ear-coverts, with often a more or less grey shade in the hinder part of the head. It is a gregarious species, nesting in large colonies, known as gulleries, mostly in inland situations. In Ireland it is probably the most numerous of our Gulls—in point of numbers its only competitor is the Herring-Gull—and of late years it seems to be to some extent sacrificing its right to be considered a Sea-Gull.

(13) **The Little Gull**, *L. minutus* Pallas, is the smallest known Gull and its eggs are indistinguishable from those of the Common Tern. It breeds in Northern Europe and Asia, and is a visitor to the British Islands in autumn, winter and spring. It occurs yearly, often in large numbers, on the east coast of England and frequently on the south coast. About eleven specimens have been obtained in Ireland, one in the Municipal Museum was shot in Belfast Lough on 23rd December, 1847.

(14) **Ross's Gull**, *Rhodostethia rosea* (Macgillivray). This beautiful Arctic species, sometimes called "The Rosy Gull" on account of the rose-coloured feathers of its underparts, differs from other Gulls in its having a wedge-shaped tail whence it is sometimes alluded to as "The Wedge-tailed Gull." This rare bird (for its existing numbers are believed to be few) breeds in Siberia, and its place in the British List is accorded for one specimen said to have been obtained in Yorkshire in 1846 or 1847. This specimen, which is preserved in the Leeds Museum, is certainly a bird of this species, but doubts have been expressed as to its really having been locally obtained.

(15) **Sabine's Gull**, *Xema sabinii* (Sabine). In the genus *Xema* (containing only two species—one South American) the tail is forked. The present species is of circum-polar distribution and is almost an annual visitor to our islands in autumn and winter. Sabine's Gull was first recorded as British by William Thompson from the specimen, whose picture was exhibited on the screen, which was shot in Belfast Lough on 18th September, 1822. Thompson had also the honour of describing this bird in its first year's

plumage in a paper communicated to the Linnean Society of London at its meeting on 15th April, 1834. This specimen is still preserved in the Belfast Municipal Museum. Some twelve specimens of this species have been obtained in Ireland, seven in Dublin Bay, three in Belfast Lough and two in Co. Donegal, all of these being in immature plumage.

(16) **The Ivory Gull.** *Pagophila eburnea* (Phipps), is a circum-polar species which wanders southwards in winter and has twice been obtained in Ireland in the counties of Louth and Kerry, but others are reputed to have been seen. Its mature plumage is almost entirely snow-white with yellow bill and black feet. Arctic explorers tell us that, except during the nesting period, it is seldom seen inland but usually found sitting on the ice. Flocks of these birds often sit round a hole in an ice-floe for hours at a stretch as if in council, a habit which has earned for this bird the name of "Councillor." It is called by the Norwegians "The Ptarmigan of the Ice."

(17) **The Kittiwake Gull,** *Rissa tridactyla* (Lin.), a beautiful little dove-like Gull, is abundant as a nesting species on our cliff-bound coasts, where, on the ledges of the rock it breeds in large colonies. At this period it is easy to identify for if a stone be dropped down the face of the nesting cliffs the birds will sail out with graceful flight all the while uttering their name, "Kitty-wake, Kitty-wake." In Ulster it is only known to nest in the counties of Antrim and Donegal. The genus *Rissa* is characterised by the absence of a hind toe, though in some examples vestiges of this member may be found.

The question has often been asked:—How may the different species of Gulls be most easily recognised? The task is sometimes far from easy, for some of the species do not attain the mature plumage until four or five years old, and during this period the birds present a succession of plumages, and further, in several of the species the coloration is different in the garbs of summer and winter. In diagnosing our resident Gulls (at least those over a year old) perhaps the simplest feature on which to base an opinion is the colour of the legs and feet. In the Common these are yellowish-green; in the Herring-, flesh-coloured; in the Great Black-backed they are also flesh-coloured, but here the dark-coloured mantle and the size of the bird prevent confusion; in the Lesser Black-backed, bright yellow;

in the Black-headed, red; and in the Kittiwake, black. It must, however, be borne in mind that some of the non-resident Gulls have similarly coloured legs and feet to those of our resident species, and for their recognition other factors must be taken into account. The foot coloration of our visitant Gulls is as follows:—Sabine's, brown or blackish; Ross's, red; Bonaparte's, orange-red; Little, vermillion; Mediterranean Black-headed, red; Great Black-headed, greenish yellow with orange webs; yellow-legged Herring, brilliant yellow; Glaucous, bright pink; Iceland, yellowish flesh-colour; and Ivory, black.

Of the Terns or Sea-Swallows eleven species find a place in the British List. Recorded examples of **Ruppell's Swift Tern**, *Sterna bergii*, said to have been obtained Dublin, 1846; of **Leopoli's Sooty Tern**, *S. anethetus*, reported having been taken off a light-ship in the mouth of the River Thames, September, 1875; and of the **Noddy**, *Anous stolidus*, two said to have been obtained off the south-east coast of Ireland about 1830, and one in Cheshire about 1891, are expurged owing to inconclusive evidence as to their capture—indeed, in the case of the first cited it was clearly proved that Thompson had been hoaxed.

(1) **The Common Tern**, *Sterna hirundo* Lin., and the next species are very numerous in the British Islands, the latter perhaps preponderating in Ireland. When the nesting colonies are maritime they are often composed of both Common and Arctic Terns, but the latter is not known to nest inland, which the Common frequently does. On an island off the coast of Co. Down I have seen the nests of these birds so closely planted that great care was necessary lest one in walking should trample upon the eggs. Unfortunately disaster appears to have overtaken this colony.

(2) **The Arctic Tern**, *S. paradisea* Brünnich, closely resembles in general appearance the Common Tern, but is of rather more slender build, has a darker breast, and is without the horn-coloured tip found on the bill of the Common Tern. Adults at rest may be distinguished from Common Terns by the comparative lengths of wing and tail. In the Common Tern the tips of wing and tail are about equal, but in the Arctic Tern the outside tail feathers project considerably beyond the wing tips. Above all birds this species has probably the greatest latitudinal range, breeding in 82° N. or even higher and having been observed on the shores of the Antarctic Continent. The eggs of

both Common and Arctic Terns are subject to great colour variation and are difficult if not impossible to segregate, those of the latter species are, however, usually darker and of somewhat smaller size.

(3) **The Roseate Tern**, *S. dougalli* Montagu, may be distinguished from the two former species by its long and slender bill which is orange at the base and black at the tip, but more especially by the inner webs of the primaries being white to their tips. It is so named on account of the beautiful rosy flush seen on the underparts, a feature which unfortunately soon disappears after death. This rosy flush is sometimes noticeable to a less extent in our other Terns. The Roseate Tern was found nesting in the Cumbrae Islands in the Clyde about the end of the 18th century and was described by Montagu in 1812. Several nesting colonies in the British Islands were afterwards discovered, and in Thompson's time many were breeding on one of the Cope-land Islands off the coast of Co. Down. These colonies gradually diminished, and by 1884 it was considered extinct as a breeder in the British Islands. However, during the past few years Roseate Terns have again commenced nesting in several English and Irish localities though it is to be feared that the ravages of the collector have already banished them in some places.

(4) **The Little Tern**, *S. minuta* Lin., is easily recognised by its small size, quicker wing movements and by its white forehead. In Ulster it is known to breed in the counties of Down and Donegal and, if one might venture to prophesy, its nest will yet reward the searcher in Co. Antrim* and perhaps also in Co. Derry. In May, 1913, Mr. Charles Oldham and myself saw a pair on a sandy shore—a typical nesting ground for this specimen—on the Antrim coast, and on mentioning this circumstance to the late R. J. Ussher he at once exclaimed, "I wonder what the birds were doing there; it is not their habit to wander far from their nesting sites in the breeding season!" In company with Mr. Ussher in 1910 I visited an island in Clew Bay, Co. Mayo. This island at high tide was merely a sand strip, but on it we found twenty-six nests of the Little Tern. I say nests, but it may be well to mention that no nesting material was used, the eggs being laid in mere hollows scratched out in the sand.

*Since this Paper was read Mr. J. R. H. Greeves has found the Little Tern nesting in Co. Antrim, in the place where the birds were seen in 1913.—N.H.F.

(5) **The Caspian Tern**, *S. caspia* Pallas, is the largest bird of the genus, inhabiting South-Eastern Europe and Western Asia. To the British Islands it is a rare vagrant, less than twenty specimens having been obtained—all in England.

(6) **The Gull-billed Tern**, *S. anglica* Montagu, breeds in Eastern and South-Eastern Europe and Central and Southern Asia. About twenty-four specimens have been identified in the British Islands most of which were obtained on the south coast of England. One specimen had been recorded from Belfast Lough, but on its being submitted to the late Howard Saunders he pronounced it an Arctic Tern. The species was first described by Montagu from a specimen shot in Sussex. He, being unaware that this bird was only a rare visitant to our shores, bestowed on it the inappropriate specific name *anglica*.

(7) **The Sandwich Tern**, *S. sandvicensis* Latham, derived its trivial and specific names from Sandwich in Kent, where it was first recognised in 1784. It is a summer visitant to our islands, nesting in several localities in England, Scotland and Ireland. In Great Britain its breeding haunts are almost if not exclusively coastal, but in Ireland there are several inland breeding colonies as well as a few on the sea coast. One of the latter, in Co. Down, has, I fear, been almost extirpated by collectors. Let us hope the lately formed Ulster Society for the Protection of Birds will be able to prevent such outrages.

(8) **The Sooty Tern**, *S. fuliginosa* Gmelin, is a widespread tropical species which occasionally wanders to Europe and of which six specimens have been procured in England.

(9) **The Black Tern**, *Hydrochelidon nigra* (Lin.), formerly bred in England, but is now only known as a passage migrant to these islands. It has been recorded from twelve or thirteen Irish counties, usually in autumn, and the birds in immature plumage.

(10) **The Whiskered Tern**, *H. leucoparcia* Temminck, breeds in Southern Europe, Asia and North Africa. To the British Islands it is a rare visitant—twelve specimens having been recorded from England, one from Scotland and one (Dublin Bay, 1839) from Ireland.

(11) **The White-winged Black Tern**, *H. leucoplera* (Schinz), breeds in South-Eastern Europe and in Asia, wintering in South Asia, Africa, Australia and even New

Zealand. To our country it is a rare vagrant in spring and autumn. Six examples of this species have been taken in Ireland, all of them in the southern part of the island.

The last named three species are known as Marsh Terns and, at least in the breeding season, subsist mainly on insects.

Our list only includes four Skuas or, as they are sometimes termed Skua-Gulls. They differ from the Gulls and Terns, in addition to the features already mentioned, by having the bill furnished with a wax-like "cere," such as is found on Birds of Prey and Parrots. The Family contains two genera, both of which are represented in the British avifauna, one by one, and the other by three species.

(1) **The Great Skua** or **Bonxie**, *Catharacta skua* Brünnich, a bird about equal in size to the Herring-Gull, is the largest of the group. It breeds in the Shetland Islands, where of late years, under strict protection, it has greatly increased in numbers. Elsewhere in these islands it is usually a winter visitor, seldom being seen inland. As well as pursuing Gulls and Terns and forcing them to disgorge their prey, it will attack, kill and eat the birds themselves. The central pair of tail feathers in this species only projects about half an inch beyond the others.

(2) **Richardson's Skua**, *Stercorarius parasiticus* (Lin.), breeds throughout the Arctic and Sub-Arctic regions of both hemispheres, its most southerly nesting place being in North Scotland. In winter it migrates southwards, being recorded from the Cape of Good Hope, Rio de Janiero and even Australia and New Zealand. The central pair of tail feathers is sometimes three inches longer than the others. There are two very distinct varieties in this species, one being entirely of a sooty colour and the other with light under-parts, but the two appear to mate indiscriminately. It feeds principally on fish, obtained by robbing the smaller Gulls and Terns, but it also preys on wounded or disabled birds, and is said to plunder the nests and consume the eggs of other sea-fowl, and has been known to pick up worms and mollusks. It is sometimes called the Arctic Skua, but this name is inappropriate as its habitat is much less Arctic than the two succeeding species. In the Shetlands it is known as "Scoutie."

(3) **Buffon's Skua**, *S. longicaudas* Vieillot. In this species the middle pair of tail feathers may attain a length of nine inches more than that of those at each side of them,

hence it is sometimes styled the Long-tailed Skua. It breeds in high latitudes, seldom south of the Arctic Circle, migrating in autumn and winter as far south as Gibraltar, as well as to about 40° N. on the American coast. It is the smallest of the Skuas and is said to "glide along with effortless flight, and indeed to present the embodiment of grace and the poetry of motion."

(4) **The Pomatorhine Skua**, *S. pomarinus* (Temminck), is found during the breeding season in the Arctic tundra of both hemispheres, whilst in winter it wanders into southern oceans, having been obtained in North Australia, Western and South-Western Africa and on the coast of Peru. The pair of central tail feathers, which are broad and rounded at the ends, project about four inches beyond the others and each feather is vertically twisted, on account of which it has been designated the Twist-tailed Skua. Melanistic varieties of this species are not uncommon.

Viewed from the standpoint of human economy we may regard the Skuas, which are few in numbers, as a negligible quantity. The Terns do take toll of young or small fish, but surely for their æsthetic qualities we can afford them a share. As to the Gulls the problem is more complicated for some of them undoubtedly consume a large quantity of young fish, and the Herring-Gull, when inland in autumn will appropriate a quantity of our grain; but on the other hand all the Gulls render us inestimable service as scavengers, whilst in the fields they perform good work in ridding us of numerous grubs detrimental to our crops. Detailed research on the stomach contents of the Black-headed Gull shows that some 70-80 % consisted of remains of animal matter injurious to our interests.

The paper was illustrated by fifty lantern slides, and on its conclusion was spoken to by the President and Messrs. R. J. Welch, M.Sc., M.R.I.A., and J. R. H. Greeves, B.Sc.

GREAT EARTHQUAKES IN MODERN TIMES.

The fifth ordinary meeting of the Winter Session was held in the Assembly Minor Hall, Howard Street, on Tuesday, 19th February, when Mr. F. E. Tillemont-Thomason, F.R.S.G., F.Ph.S., C.E., lectured on above subject. The President (Mr. J. A. S. Stendall, M.B.O.U.) occupied the chair, and there was a large audience.

At the outset the lecturer referred to the earth's unrest in 1906, which commenced in Japan and extended to Chili, devastating whole states and cities. In more recent years, following shocks in Chili, it had been established by seismology that earthquakes were the results of deep dykes in the ocean bed which in a large measure influenced the earth and reacted upon the earth's crust. The lecturer said he had never believed that there was a great cauldron of fire inside the earth and that this was responsible for earthquakes. On the other hand, he had come to the conclusion that the eruption might be due to the gradual cooling of the earth's crust, resulting in shrinkage. He went on to describe the Messina 'quake, and related many touching incidents in connection with rescue work, which he illustrated by means of lantern slides. The destruction of Kingston, in Jamaica, was, he considered, proportionately the most appalling of all disasters within recent years. The only redeeming feature of the catastrophe was the entire absence of crime in the city, a large number of the population being negroes, who behaved splendidly. The lecturer gave a vivid description of his own experiences in the San Francisco earthquake in 1906, and related many curious incidents, both amusing and tragic. He spoke of the lawlessness which prevailed in the ruined city.

At the close the thanks of the meeting were voiced by Dr. Deans.

RATHLIN ISLAND.

The sixth ordinary meeting of the Winter Session was held in the Museum, College Square North, on 4th March. The President (Mr. J. A. Sidney Stendall, M.B.O.U.) presided over a large attendance. Four short addresses were delivered.

The President dealt with the zoological aspect of the island, mentioning that the first cave spider to be recorded in Co. Antrim was found on Rathlin. The chough, which was a rare bird in the British Isles, was to be found there.

Captain C. D. Chase, M.A., M.C., speaking on the botany of Rathlin, said there were 410 species of plant life recorded. This number was over half the total for County Antrim.

The topography and geology of the island was effectively dealt with by Mr. S. A. Bennett, B.A., B.Sc., while Mr. J. A. Moffatt outlined its history.

The addresses, which were the result of a recent visit to Rathlin, were well illustrated by lantern views.

LEPIDOPTERA OF THE NORTH OF IRELAND.

The seventh ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday, 18th March. Mr. Thomas Greer, the well-known Co. Tyrone entomologist, was the lecturer. The President (Mr. J. A. S. Stendall, M.B.O.U.) occupied the chair.

Mr. Greer explained, with the help of specimens and drawings, the different kinds of butterflies existing in Northern Ireland, and he compared them with the species found in the North of England. He spoke appreciatively of some lepidopterists of the past who came from Belfast districts, including Mr. Kane, who revised Mr. Burchell's book on Irish Lepidoptera, Rev. Canon Bristow, Mr. C. W. Watts, and Mr. J. E. R. Allen.

The discussion at the close was taken part in by the President and Messrs. W. M. Crawford, B.A., F.E.S., F.Z.S., and R. J. Welch, M.Sc., M.R.I.A.

THE GEOLOGY OF THE AREAS VISITED BY THE CLUB IN THE PAST, AND THOSE LIKELY TO BE VISITED IN THE FUTURE.

The eighth and final ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday, 1st April, when Mr. R. J. Welch, M.Sc., M.R.I.A., in a lecture intended mainly for younger members, dealt with above subject. The President (Mr. J. A. S. Stendall, M.B.O.U.) occupied the chair.

Previous to the lecture, Mr. S. A. Bennett, B.A., B.Sc., read his Report as delegate to the conference of delegates of corresponding societies of the British Association.

Mr. Welch gave a rapid outline of the geology of Antrim, Down and Derry, and in the course of his address said that fortunately for students and enthusiasts in geological matters in the North of Ireland practically every formation represented in the British Isles occurred in these three counties.

Over eighty lantern slides from photographs by various members of the Club were used.

ANNUAL MEETING.

The Annual Meeting was held in the Museum, College Square N., on Tuesday, 15th April, at 8 p.m., the President (Mr. J. A. S. Stendall) in the chair.

The following Reports were presented:—

ANNUAL REPORT.

The Committee submits its Sixty-first Annual Report, as follows:—

During the year 1 Corresponding Member, 2 Honorary, 180 Ordinary and 35 Junior Members were elected.

14 Ordinary Members resigned, and 1 Corresponding Member and 5 Ordinary Members died.

The membership now consists of 1 Corresponding Member, 8 Honorary, 2 Life, 693 Ordinary and 73 Junior Members, making a total of 777.

Ten meetings of Committee were held during the year, at which the attendances were as follows:—

Robert Bell	...	...	7	J. R. H. Greeves	...	...	5
S. A. Bennett	...	...	8	F. A. Heron	...	...	2
Miss S. Blackwood	...	...	9	A. P. Hoskins	...	...	0
A. A. Campbell	...	...	10	R. S. Lepper	...	...	6
N. Carrothers	...	...	9	S. M. Macoun	...	...	10
J. K. Charlesworth	...	...	1	W. R. Megaw	...	...	8
A. M'I. Cleland	...	...	9	James Orr	...	...	9
W. M. Crawford	...	...	5	T. E. Osborne	...	...	9
T. M. Deans	...	...	7	J. A. S. Stendall	...	...	10
W. A. Green	...	...	0	R. J. Welch	...	...	6
J. T. Greeves	...	...	0				

Mr. J. T. Greeves resigned membership of the Committee immediately after election, and Mr. R. S. Lepper was co-opted in his place.

Ten Summer Field Excursions were held:—

Black Mountain	...	...	19th May	...	45	Present.
Murlough Bay	...	...	2nd June	...	97	"
Slemish and District	...	...	16th June	...	62	"
Monlough	...	...	30th June	...	32	"
Loughinisland, Clough, and Seaforde	...	...	21st July	...	53	"
Woodburn Glen and Duncrue Fort	...	...	11th August	...	65	"
Cushendun and Glenariff	...	...	1st September	...	63	"
Nendrum	...	...	8th September	...	40	"
Dundrum	...	...	15th September	...	72	"
Purdysburn Glen	...	...	29th September	...	57	"

A most successful *conversazione* was held in the Assembly Hall, Fisherwick Place, on 23rd October. Over 300 members and friends were present, and greatly enjoyed the many interesting exhibits and the social intercourse.

Eight meetings were held during the Winter Session, when the following lectures were delivered and papers read, abstracts of which will be found in the Proceedings:—

1923.

November 27 ... PRESIDENTIAL ADDRESS.—The Club and Its Future.

December 18 ... The Romans in Britain: Hadrian's Wall.
JOSEPH SKILLEN.

1924.

January 15 ... Some Common Objects of the Sea-Shore
D. J. CARPENTER, A.R.C.SC.L.

January 29 ... The British Gulls, Terns and Skuas.
NEVIN H. FOSTER, F.L.S., M.R.I.A., M.B.O.U.

February 19 ... Great Earthquakes in Modern Times.
F. E. TILLEMONT-THOMASON, F.R.S.G., F.P.H.S.

March 4 ... Rathlin Island, its History,
Flora and Fauna.

THE PRESIDENT, S. A. BENNETT, B.A., B.Sc.,
CAPT. C. D. CHASE, M.C., M.A., and J. A. MOFFETT.

March 18 ... Lepidoptera of the North of Ireland.
THOMAS GREER.

April 1 ... The Geology of the Areas visited by the
Club in the past, and those likely to
be visited in the future.

R. J. WELCH, M.Sc., M.R.I.A.

These meetings were well attended.

During the year the Route Naturalists' Field Club was organised, and, at its request, it was affiliated to our Club. The Honorary Secretary, for the time being, of the Route Club was elected a Corresponding Member of our Club.

Mr. S. A. Bennett, B.A., B.Sc., was our delegate to the Conference of Delegates of Corresponding Societies of the British Association. His report will be included in the Proceedings,

We desire to express our thanks to Mr. Hamill, White-rock; Mr. Montgomery, Slemish; Mr. M'Williams, Monlough; Mr. Burke, J.P., Drumcaw; Mrs. Forde, Seaforde; Mr. Johnston, Mahee Island; Mr. R. W. H. Blackwood, J.P.; Mr. George C. Reilly, Rev. Canon M'Neice, Carrickfergus; and Mr. H. C. Lawlor, M.R.I.A., for assistance in connexion with our field work. We wish also to acknowledge the kindness of the Press in reporting our activities, and the help rendered by the Railway Companies in arranging our Excursions.

J. A. SIDNEY STENDALL, *President.*

A. ALBERT CAMPBELL, }
THOMAS M. DEANS, } *Honorary Secretaries.*

HON. LIBRARIAN'S REPORT.

The Library has been better taken advantage of during the past year, which is a gratifying sign.

Two new exchanges have come on to our list, the Natural History Society of Northumberland, Durham, and Newcastle-upon-Tyne and the Isle of Wight Natural History Society.

The Library suffers greatly from over-crowding, owing to insufficient shelf accommodation, and from the difficulty of opportunities for members consulting it freely.

A list of exchanges with other Clubs and Societies will be found on another page.

W. M. CRAWFORD,
Hon. Librarian.

REPORT OF JUNIOR SECTION.

The past year has been even more successful than the previous one. The membership of the Section is now 72. 35 having joined during the year. Our excursions during the summer included The Kempe Stone, Scrabo Quarries, The Flush, Divis and Ardglass, in addition to a visit in conjunction with the Club to Mr. Bell's Flint Site on Black Mountain. On the Ardglass excursion tea was kindly provided at Castle Shean by Mr. F. J. Bigger, M.R.I.A., and we included in our day's work—Inch Abbey, Down Cathedral, Saul, Raholp Church, a passing glimpse of Kilclief Castle, Ardtole Church and Ballynoe Stone Circle. The attendances at the excursions were fairly good, averaging about 9 or 10, the lowest being on the Divis afternoon

(3). The thanks of the Committee are due to Capt. C. D. Chase, M.A., M.C., Mr. F. J. Bigger, M.R.I.A., and Mrs. W. L. Greeves for kindly providing tea on various excursions.

During the winter session notices of the Club meetings have been sent to the Juniors, and the attendances have been encouraging.

At the Annual Conversazione, held in the Assembly Hall, the Junior Section table was well filled with exhibits, prizes in various subjects being gained by Nora Stendall, Maurice and Ronald Crawford and Tom Megaw.

J. RONALD H. GREEVES.

Hon. Secretary.

DECEASED MEMBERS.

Mr. John Pim, J.P.

Dr. J. S. Holden.

Miss M. E. G. Houston.

Mr. J. W. Kernohan, M.A.

Mr. S. C. Black.

Dr. Hon. Treasurer's Account for the Year ending 31st March, 1924.

Cr.

Balance from year 1922-23	£11 9 9	Printing and Stationery	£51 9 9
Subscriptions received, including arrears—553 at 5s	138 5 0	Postages	30 13 6
Subscriptions paid in advance for year 1924-25—		Hire of Museum Rooms	7 10 0
34 at 5s	8 10 0	Hire of Lantern	8 0 0
Affiliation Fee Route Naturalists' Field Club	0 5 0	Fire Insurance	0 10 0
Balance from Excursions	18 13 8	Delegate to British Association	2 2 0
Supplementary amount received for tickets sold for		Subscription—English "Naturalist" for year 1924	0 15 3
Conversazione of 10th April, 1923	0 18 0	Grant to Junior Section	2 0 0
Sale of Proceedings, etc.	0 15 6	Addressing Circulars, etc.	9 13 6
Lepidoptera Account—		Excursion Expenses—Railway fares of two members to places visited by Club	0 7 0
Subscriptions received	6 5 0	Incidental Expenses—Rubber Stamp, Cheque Book and Telephone Messages	1 3 4
		Refund re Monlough Excursion	0 1 0
		Refund re Nendrum Excursion	0 6 3
		Gratuities and Subscriptions	1 12 6
		Expenses of Conversazione of 23rd October, 1923	3 9 10
		Expenses of Mr. Tillemont Thomason's Lecture	4 14 0
		Paid for Drawings (£3 10s) and Blocks (£8 5s) of Lepidoptera	11 15 0
		Coloured Prints of Lepidoptera—1,000 copies	3 6 9
		Refund Subscriptions of two Junior Members	0 2 0
		Blocks of Flint Implements for illustrating Proceedings	1 12 10
		Balance carried forward to next Account	43 17 5
	£185 1 11		£185 1 11

Audited and found correct. Balance in hands of Honorary Treasurer, £43 17s 5d.

11th April, 1924.

THOMAS EDENS OSBORNE, Hon. Treasurer.
S. M. MACCOUN,
W. M. CRAWFORD, } Hon. Auditors.

Fifteen Ordinary and two Junior members were elected. Previous notice having been given, the following alterations were made in the Rules:—

Moved by Mr. S. A. Bennett:—"That Rule III. be altered as follows, as regards the election of Ordinary Members: ' Ordinary Members shall be proposed and seconded by two existing Members on a Nomination Form to be obtained from the Honorary Secretaries. These proposals shall come before the Committee of the Club who shall vote by ballot for or against acceptance. The names of the accepted candidates shall be submitted for election half-yearly—at the Annual Meeting in April and the Annual Conversazione in October. Ordinary Members shall pay annually a subscription of Five Shillings, and shall on election pay an Entrance Fee of Five Shillings.' "

Moved by Rev. W. R. Megaw:—"That Rule III. be altered by adding after the first sentence: ' Not more than twenty-five Ordinary Members shall be elected half-yearly.' "

Moved by Mr. A. A. Campbell:—"That Rule II. be altered by adding to the first paragraph. ' and those who are two years in arrear shall cease to be Members of the Club.' "

Moved by the President:—"That the first sentence of the third paragraph of Rule III. be altered to read: ' Junior Members, who must be between the ages of twelve and twenty-one years, may be elected at any Meeting of the Club, and shall not be required to pay any Annual Subscription from twelve to eighteen; from eighteen to twenty-one they shall pay an Annual Subscription of Two Shillings and Sixpence which shall be wholly used for the benefit of the Junior Section.' "

Moved by Mr. James Orr:—"That the Sections be re-constituted, and that Members desiring to join any Section shall pay an additional subscription of One Shilling to the Secretary of the Section (such subscriptions to be used for the benefit of the Section); and that Rule VII. be altered accordingly."

A recommendation from the Committee that a Recording Secretary be appointed, and that Rule V. be amended accordingly was discussed, and, on the motion of Mr. A. M'I. Cleland, seconded by Mr. A. A. Campbell, was adopted.

A further recommendation from the Committee was discussed and adopted, on the motion of the President, seconded by Mr. S. M. Macoun, namely—That a Club Medal be instituted, with the following Rules:—

- (1.) The Medal shall be known as “The Belfast Naturalists’ Field Club Medal, instituted 1923.”
- (2.) One Medal only shall be awarded annually, but it may be withheld if the Committee of the Club so decides.
- (3.) Only Members of the Club in full membership for over ten years shall be eligible to receive the Medal. The Medal shall be awarded solely for work done in Ireland in connexion with the Club’s activities. The recipient need not necessarily at the time of the award be resident in Ireland.
- (4.) The awarding of the Medal shall be at the discretion of the Committee of the Club. The Committee shall appoint, at the first Committee meeting of the Club’s year, a Sub-Committee consisting of the President, Vice-President, Honorary Secretaries, Honorary Treasurer, and two other members of the Committee (the Honorary Secretaries to be Conveners) to nominate a suitable person (if any) whose name shall be submitted to the full Committee at a meeting specially summoned, at which at least fourteen members must be present. Approval or rejection shall be determined by ballot, a two-thirds majority to be necessary for an award.
- (5.) These Rules shall not be altered unless by a two-thirds majority at an Annual Meeting of the Club, one month’s notice in writing of the proposed alteration having been previously given to the Honorary Secretaries.

The following Office-bearers were elected for Session 1924-25:—President, Mr. J. A. S. Stendall; Vice-President, Mr. James Orr; Honorary Secretaries, Mr. A. Albert Campbell and Dr. T. M. Deans; Hon. Treasurer, Mr. T. Edens Osborne; Hon. Librarian, Mr. W. M. Crawford; Hon. Secretaries of Sections, Mr. S. A. Bennett (Botany), Mr. A. M’I. Cleland (Geology), Mr. S. M. Macoun (Zoology), Mr. Joseph Skillen (Archaeology), and Miss S. Blackwood (Junior); Ordinary Members of Committee, Mr. N. Carrothers, Mr. Robert Bell, Mr. J. R. H. Greeves, Capt. C. D. Chase, Miss W. J. Sayers, and Mr. D. J. Carpenter.

REPORT OF THE CLUB'S DELEGATE TO CONFERENCE OF CORRESPONDING SOCIETIES OF THE BRITISH ASSOCIATION FOR THE YEAR 1923.

The 91st Meeting of the British Association which I attended as Delegate of the Belfast Naturalists' Field Club, was held in September, 1923, at Liverpool. The Conference met in the Civil Court, St. George's Hall, Liverpool, on Thursday, September 13th, Professor H. H. Turner, F.R.S., Savilian Professor of Astronomy in the University of Oxford, in the chair. Thirty-nine delegates were present, representing forty-nine societies.

The President took as the subject of his address:—

“The Work and Relations of Corresponding Societies.”

This address naturally covered a wider scientific field than is usually associated with field club activities, but amongst the topics touched on which may be of interest to our Members were the following:—

(1) The use of a library such as our Club already possesses.

(2) The advisability of making a collection of Lantern Slides and Photographs of local interest.

(3) The appeal of the Royal Meteorological Society for more detailed observations than those usually supplied by their local observers such as:—

(a) The dates of flowering of our native plants in different localities from year to year.

(b) The dates of arrival, nesting and departure of our bird migrants.

(c) The dates of first appearance of our native insects.

This and similar work along these lines may be confidently recommended to Members of our Club.

(4) The duty of protecting our native flora and fauna by the formation of reserved areas, or by other means.

(5) The duty of protecting prehistoric sites of universal interest which happen to lie within the area in which the club works.

These duties fall well within the scope of our Club, and should occasion arise, I make no doubt that the Belfast Naturalists' Field Club will gladly shoulder its responsibilities.

At this meeting sundry proposals submitted to the Conference by delegates and others were discussed and referred to the Corresponding Societies' Committee for examination and report, and the Conference adjourned till Tuesday, September 18th.

At this adjourned meeting, among other recommendations submitted by the Corresponding Societies' Committee which were adopted and forwarded to the Committee of Recommendations of the British Association, I select the following:—

(1) To represent to His Majesty's Government, in view of recent proposals to utilise for naval, military, or commercial purposes sites of historic or scientific interest or of natural beauty, such as Avebury, Holmbury Hill, and Lulworth Cove and its neighbourhood, the urgent need of more effective protection of such sites from disfigurement or obstruction.

(2) To request the Director-General of the Ordnance Survey to reconsider his decision to discontinue the issue by the Ordnance Survey of quarter-sheets of the six-inch map on the ground that, if quarter-sheets are not available, teachers, students, and others engaged in various kinds of research on local and regional distributions will be put to expense and inconvenience in providing themselves with the sheets necessary for their work.

(3) To call the attention of local scientific societies to the need for prompt and systematic supervision, in the interests of scientific record, of all sections and other excavations which were opened during the construction of new roads or other public works.

In view of the activity displayed in the neighbourhood of Belfast this last suggestion may afford our newly constituted Geological Section opportunities to justify its existence.

A discussion followed on the Function of local Scientific Societies in regard to Schemes of Town Planning, and the Conference then adjourned.

S. A. BENNETT, B.A.(Cantab.), B.Sc.(Lond.).

THE ROUTE NATURALISTS' FIELD CLUB.

Founded in 1923 by the Hon. Helen Macnaghten, of Runkerry, Bushmills.

The foundation members were, in addition: *Rev. F. Medcalf, *Rev. J. Bell, *Rev. S. M'Cully, *Rev. E. M. Gumley (Hon. Secretary and Treasurer), Miss M'Mullan, and Messrs. *A. Kirkpatrick and Joseph Black. Those above marked with an * and the following constitute the first Committee:—Mrs. Huey, Mrs. Black, Messrs. Samuel Henry, and J. J. Phillips.



PROCEEDINGS
AND ANNUAL REPORT
OF THE
BELFAST NATURALISTS'
FIELD CLUB,

For the Year Ending 31st March, 1925

(SIXTY-SECOND YEAR)

SERIES II.

VOLUME VIII.



PART VI

1924-25.

EDITORS:

A. ALBERT CAMPBELL, F.R.S.A.I.

THOMAS M. DEANS, LL.D.

Advisory Editorial Committee:

Botany—S. A. BENNETT, B.A., B.Sc.

Geology—A. McL. CLELAND.

Zoology—S. M. MACOUN.

Archæology—JOSEPH SKILLEN.

BELFAST NATURALISTS' FIELD CLUB.

SIXTY-SECOND YEAR, 1924-25.

GENERAL COMMITTEE.

President:

J. A. SIDNEY STENDALL, M.B.O.U.

Vice-President:

JAMES ORR.

Hon. Treasurer:

T. EDENS OSBORNE, F.R.S.A.I., 4 College Square North, Belfast.

Hon. Librarian:

W. M. CRAWFORD, B.A., F.E.S., F.Z.S., Orissa, Marlborough Park, Belfast.

Hon. Sec. of Botanical Section:

S. A. BENNETT, B.A., B.SC., Campbell College, Belfast.

Hon. Sec. of Geological Section:

A. M'I. CLELAND, 28 Green Road, Knock, Belfast.

Hon. Sec. of Zoological Section:

S. M. MACOUN, Clanrolla, Windsor Park, Belfast.

Hon. Sec. of Archaeological Section:

JOSEPH SKILLEN, 25 Stranmillis Gardens, Belfast.

Hon. Sec. Junior Section:

Miss S. BLACKWOOD, 6 College Green, Belfast.

Ordinary Members of Committee:

Retire 1925.

R. J. Welch, M.SC.,
M.R.I.A.
R. S. Lepper, M.A.,
F.R.HIST.S.
D. J. Carpenter,
A.R.C.SC.I.

Retire 1926.

Rev. W. R. Megaw, B.A.
Capt. C. D. Chase, M.C.,
M.A.
Miss W. J. Sayers, B.A.

Retire 1927.

N. Carrothers.
Robert Bell.
J. R. H. Greeves, B.SC.

Hon. Secretaries:

A. ALBERT CAMPBELL, F.R.S.A.I., Drumnaferrie, Rosetta Park, Belfast.

THOMAS M. DEANS, LL.D., Academy House, Rosetta Belfast.



PROCEEDINGS.

SUMMER SESSION.

GARRON POINT.

Date—31st May, 1924. Conductors—R. J. Welch, M.Sc., M.R.I.A.,
and A. M'L. Cleland. Number present—50.

The first field excursion party for the season left College Square North at 9 a.m. and journeyed via Ballynure, Larne, and the Coast Road. The only stop on the way was at Straidkilly to allow inspection of the village, which is built on the slipping talus of Lias and is moving steadily down the hill to the sea. Here an old clog-wheel car was examined and photographed. On reaching Garron Tower the party scattered on their various interests—the zoologists and botanists climbing up through a very steep part of the wood on a search for land-shells and plants. A dozen common species of the former were collected, with a few other invertebrates such as myriapods and isopods. What is claimed to be the finest eucalyptus tree in the British Isles was examined. A fine variety of the polypody fern was seen on an old wall with some big clumps of another fern—*Asplenium trichomanes*. Near this was a small mass of the rare Bedstraw (*Gallium mollugo*). After tea at the Tower a start was made for home, which was reached about 10 p.m.

DUNADRY AND TEMPLEPATRICK

Date—14th June, 1924. Conductor—Capt. C. D. Chase, M.C., M.A.
Number present—70.

The party proceeded by the 1-25 p.m. train to Dunadry, visiting on the way back to Templepatrick the pre-historic stone circle at Kilmakee, where Mr. Francis Joseph Bigger, M.R.I.A., described the ancient civilisation of the Sixmile-water Valley so far as it can be made out from its numerous forts and stone circles.

Under the guidance of the Rev. C. F. Newell, rector of the parish, the party visited Castle Upton, a fine example of Scottish baronial architecture, which belonged to the Norton and Upton families. The old graveyard in the demesne contains the Upton vault and the grave of William

Orr, the Irish patriot who was executed in 1797. Here also are buried the Rev. Josias Welch, a grandson of John Knox, and the Rev. Isaac Patton, the first Seceder minister in Ireland. The Rev. Alfred Turner, of the Unitarian Church, gave the party some interesting historical information.

The Sixmilewater is the habitat of our best water-Ranunculi, and Castle Upton demesne has occupied the attention of the Club for years. All the plants known to grow there were found in a flourishing condition. They include *Valerianella pryenaiica*, *Geranium sylvaticum*, *Myosotis caespitosa*, *Saxifraga granulata*, *Origanum vulgare*, and *Ranunculus tricophyllus*, while near by is one of the few stations for *Draba muralis*.

The geology of the district was described by Mr. Robert Bell. The country rock here is a rhyolite, an acid intrusive rock of very different appearance and composition from the usual Co. Antrim basalt. Immediately underlying it is the chalk which was formerly extensively worked. The rhyolite reappears on Tardree, covering a known area of about ten square miles. In the quarry at Templepatrick the rhyolite is intrusive between the basalt and the chalk, but the data are insufficient to determine the exact age and nature of the flow. Rounded and travelled pebbles of rhyolite have been found in beds usually regarded as lying between the upper and lower basalts, notably at Ballypallidy. These intermediate beds containing iron ore and bauxite are of distinct economic importance.

Tea was served in St. Patrick's Barn at the Templetown Arms, and the return journey was made by a train which stopped specially for the party at 7.35 p.m.

CRANFIELD AND TOOMEBRIDGE.

Date—28th June, 1924. Conductor—Mr. Joseph Skillen.
Number present—27.

Members left Belfast by motor coach at 10 a.m. The first stop was at Edenduffcarrick ("the brow of the black rock"), the ancient stronghold of the O'Neills on the shores of Lough Neagh. Permission had been given by Mr. G. L. Young, D.L., of Randalstown, to drive through Shane's Castle Park. The ancient church of Cranfield ("a wild garlic wood") and the adjacent holy well were inspected. This well is still resorted to for cures.

At Toomebridge, after the site of the ancient castle at "the ford of Toome" had been visited, the party proceeded to the eel fishery, walking over the seemingly crazy gang-

ways to the middle of the river, where live eels were brought up for inspection, and the method of capture explained. The archaeologists hunted over the sand dunes for prehistoric implements, and were rewarded with some characteristic examples. The diatomaceous clay deposits were also visited. After tea at Mrs. M'Cormick's, the return journey was made via Moneyglass, associated with "Burnper Squire Jones," and a brief halt was made at the beautiful new church of "Our Lady of Lourdes," which was nearing completion.

BALLYCASTLE DISTRICT.

Date—12th to 14th July, 1924. Conductor—Mr. R. J. Welch, M.Sc., M.R.I.A. Number present—21.

The revival of the "long" excursion attracted an enthusiastic little band who left Belfast at 9-30 on the morning of Saturday, the 12th July. On reaching Ballymoney, three motors from the Antrim Arms Hotel, the Club's headquarters for the week-end, conveyed the party, via Armoy and Glenshesk, to Ballycastle. Mr. Welch pointed out the circular door-head carved out of solid stone, the predecessor of the built arch, in the Round Tower at Armoy. After lunch, Murlough Bay was visited. Leaving the cars on the moorland, the party walked down to where "the waters o' Moyle" were calling beyond the great volcanic dyke of Drumnakill, with its little ancient cross and primitive church site. Here the geology of this wonderful bay was clearly explained, the centre formed of a mass of broken-up chalk slipping down over the soft triassic marls seen in the cliff section far above. After inspecting some deep crypts bored in the hard chalk by *Helix aspersa* and *H. nemoralis*, the party saw another series of holes drilled in solid rock by marine action, locally known as "pot-holes." Afternoon tea at Mrs. Clarke's cottage was much enjoyed, and the cars were rejoined by a climb up the beautiful old fern glen. Dinner and comparison of notes closed the day.

There was no official programme on Sunday. Most of the members attended Morning Service in the various churches of the village, and after lunch some motored to the lovely little Portaleen glen and bay at Tor Head, where fine masses of gneiss were seen in the glen cliffs, while others visited Bunamargy Abbey.

Monday morning saw the party off to Whitepark Bay, where the Rev. E. M. Gumley, the Secretary of the Route Club, took charge as conductor for the day. The prehistoric

"kitchen-middens" were diligently and successfully searched for worked flint implements. Returning to Ballycastle for tea, luggage was collected, and Ballymoney reached in time for the 6-54 train to Belfast.

GLENOE.

Date—26th July, 1924. Conductors—Messrs. N. Carrothers and A. A. Campbell. Number present—62.

Members travelled by the 2-15 Larne express, which stopped at Glynn station for their convenience. The old church of Glynn was first visited, Mr. Campbell giving a brief account of its history. The walk up the glen in the brilliant sunshine, tempered by a refreshing breeze, was greatly enjoyed. The botanists, under Mr. Carrothers' guidance, kept a keen look-out for and were able to report the continuance of a number of rare plants which were found here on the occasion of the Club's visit in 1875. Shortly before 5 o'clock the quaint little old-world village of Glenoe, nestling among the hills, was reached. After tea, served by Mrs. McHaffey, and a visit to the waterfalls, Mr. Robert Bell led the way to the quarries, where there is a good section of chalk formation containing numbers of flint nodules lying along the planes of bedding. The limestone of these quarries is remarkably pure, containing, according to the analysis of Professor Hodges, no less than 99.10 per cent. of carbonate of lime.

On the way to the station some members visited the rather interesting rath in a field to the left of the road. In the centre of the rath are the ruins of an old stone-built farmhouse, indicating human occupation of the site, perhaps continuously, from the time it was constructed to protect wattle or skin huts, almost to the present day.

THE SILENT VALLEY.

Date—23rd August, 1924. Conductors—Messrs. Robert Bell, G. E. Reilly and G. C. Reilly. Number present—103.

Newcastle was reached by the 10-50 train from Belfast and motor coaches completed the journey to "the Kingdom of Mourne." On reaching the Belfast Water Commissioners' property, Mr. M'Ildowie, the Resident Engineer, took charge of the large party along the culvert, pointing out the various points of interest. The botanists hunted for and found that somewhat rare plant *Drosera intermedia* in boggy ground above the moraine, a habitat that in the near future will be submerged by the waters of the new reservoir.

BALLYHORNAN BAY.

Date—6th September, 1924. Conductor—Mr. S. M. Macoun.
Number present—51.

Motor coaches leaving Belfast at 10 a.m. conveyed Members via Ballynahinch and Downpatrick to Ardglass, where a halt was made at Castle Shane. Mr. Francis Joseph Bigger, M.R.I.A., is always an ideal host, but he took special pleasure in showing the treasures of his castle to the Club of which he is a past President. The reception room is an Irish kitchen of the olden time. A fire of faggots blazes in the open hearth, a large oak-tree table stands in the centre of the floor and a great dresser against the wall; a chandelier filled with candles is suspended from the ceiling, and old-fashioned iron kitchen utensils in profusion line the walls. In the dining-room above one's eyes feast on rare antique objects of priceless value.

Ballyhornan Bay, a noble sweep of sand and shingle, with Guns Island lying at its southern end, was reached about 2 o'clock. The zoologists soon found the local variety of *Helicella barbara*. To the geologists the district was instructive, the coast line being composed of ordovician or lower silurian slate, usually tilted at high angles and containing many interesting dykes. The botanists had a splendid time. They found Rest-harrow, Sea-holly, Sea Convolvulus, Round-leaved Mallow, Sea Rocket, Good King Henry, Field Gentian, Sea Arrow-grass, Black Horehound, Sea Tree-Mallow, Parsley Water-dropwort, Sea Radish and Orache.

Among the birds observed by the ornithologists were Pied Wagtail, Rock Pipit, Heron, Kestrel, Redshank, Oystercatcher, Cormorant, Gulls, etc., as well as Jackdaws in their "galleries" at Benderg Bay.

The return journey was made past Kilclief Castle and Strangford to Downpatrick (tea at Magee's Hotel), and then home by Killyleagh, Shrigley, the Cliath Lakes, Derryboy and Saintfield.

CONVERSAZIONE.

The Winter Session was inaugurated by a *Conversazione* held in the Assembly Hall, Fisherwick Place, on the evening of Tuesday, October 21st. There was a very large attendance of members and their friends.

The exhibits included :—

BOTANY.—Rev. W. R. Megaw, B.A., mosses; E. N. Carrothers, fungi, edible and otherwise; Municipal Museum, models showing life history of a fern, model of plant cell; Linen Industry Research Institute, Lambeg (per Miss Davin), photos and slides of sites, flax stems, and sections of cloth, chart showing inheritance of flower colours; (per Mr. Nodder), demonstrations of retting bacteria and of twisting behaviour of fibres, photos of fibre structures; A. E. Muskett, specimens of plant diseases; Miss S. H. Martin (Botany Dept., Q.U.B.), hydron concentration in sunflower stem as shown by indicators; Department of Agricultural Chemistry (Q.U.B.), photos of experimental plots; N. Carrothers, North of Ireland plants; J. R. H. Greeves, plants lately added to the flora of Rathlin Island; Capt. Chase, English and Welsh plants which are rare in or absent from Ireland; S. A. Bennett, the fruits of the umbelliferæ.

GEOLOGY.—Robert Bell, minerals from Co. Antrim; A. M'I. Cleland, rhyolites of Co. Antrim; R. J. Welch, holocene shells from Ulster sandhills; T. Edens Osborne, specimens from Antrim and Down; D. J. Carpenter, crystals and crystal models.

ZOOLOGY.—Nevin H. Foster, Irish record books showing where each specimen of woodlouse, centipede, millepede, symphyle, and false scorpion had been obtained, also distribution maps; R. J. Welch, beautiful and curious shells, living specimens of the heath shelled-snail (*Helicella itala*), shell necklaces, shell knives; the President and Vice-President, birds and their eggs in natural surroundings; A. W. Stelfox, humble bees and their parasites.

ARCHAEOLOGY.—T. Edens Osborne, flint implements, Egyptian antiquities; Joseph Skillen, stone anvil and hammers, stone and flint celts, ethnological objects.

There were also interesting Entomological, Photographic, Microscopical, and miscellaneous exhibits.

After tea the President (Mr. J. A. S. Stendall) took the chair, and a short business meeting was held at which twenty-five new members were elected.

The Club Medal for 1923 was presented to Mr. William Swanston, F.G.S. (in absentia), and the Medal for 1924 to Mr. Nevin H. Foster, F.L.S., M.R.I.A.

The prize awards to members of the Junior Section were announced:—(1) In connection with the Summer Programme—Best collection of named natural history

specimens (birds' eggs excluded) made during the summer of 1924, 1, Miss Agatha Crawford, 2, Master R. H. Crawford; best collection of wild flowering plants, mounted and named, Miss Agatha Crawford; best collection of any one group of insects, Master R. H. Crawford; best botanical collection, Master John C. C. Crawford. (2) In connexion with the *Conversazione*, prizes for exhibits were awarded to Miss Nora Stendall, Master T. M. Megaw, and Miss Norah Neill.

A display of lantern views of places visited on the summer excursions brought the meeting to a close.

WINTER SESSION.

NOTE.—*The authors of the various Papers of which abstracts are given are alone responsible for the views expressed therein.*

THE FLIGHT OF ANIMALS.

The first ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday, November 25th, when Mr. J. A. S. Stendall, M.B.O.U., delivered his presidential address, the subject being "The Flight of Animals." After dealing generally with flight, the President described in detail the different methods adopted by members of the animal kingdom in proceeding from one place to another through the medium of the air. A fine selection of lantern slides, exhibited by Mr. A. R. Hogg, was used to illustrate the lecture.

Messrs. D. J. Carpenter, A.R.C.Sc.L., and S. A. Bennett, B.A., B.Sc., expressed the appreciation of the meeting.

THE BRITISH GEESE, SWANS AND DUCKS.

The second ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday, December 16th, when Mr. Nevin H. Foster, F.L.S., M.R.I.A., M.B.O.U., delivered a lecture on above subject. The President (Mr. J. A. S. Stendall, M.B.O.U.) occupied the chair.

Mr. Foster said that the geese, swans, and ducks comprised the Order of Birds *Anseriformes*, all the members of this Order bearing a strong resemblance to each other in respect of outward form, but with striking dissimilarity as regarded size and coloration. The birds all possessed four toes, the three anterior united by a web and the hind toe (practically functionless) being free. The young when

hatched were clothed with down and able to run about shortly after emergence from the egg-shell. The eggs were invariably uni-coloured, the shade varying from almost pure white to creamy-white, buff or many shades of bluish-green to olive or slate. The nest, usually placed on the ground, was composed of withered grass or other herbage and profusely lined with down plucked by the female from her own breast. The down of the various species possessed distinctive features, so that it was possible from its examination to decide to which species the nest from which it had been taken belonged. Most of these birds were inhabitants of the Temperate and Arctic regions, but many of these in winter migrated to Tropical countries, in which also a few were permanently resident.

The British list included ten species of geese, only one of which—the Grey Lag—now nested in these islands, in Northern Scotland, though formerly it bred in Ireland around Strangford Lough. In all our geese there was little apparent difference in colour between the sexes, and three of the species of “grey” geese superficially resembled each other, requiring close examination to determine the distinguishing characteristics.

Of swans we had but three species, each of which was pure white alike in male and female. The originally-introduced Mute Swan was now resident and to be found in a perfectly feral condition all over the country. When swimming, its neck was always gracefully curved, in contrast with that of the Whooper and Bewick’s which was held straight up. However, between these two there was great difference in size as well as the coloration of the beak.

The family *Anatidæ* comprised the ducks, which could be roughly divided into three groups—Surface-feeding Ducks of which we had twelve species, Diving Ducks of sixteen species, and Mergansers of which we had four species. About half of these were known to breed in the British Islands, others being winter migrants. In the ducks, as a rule, the plumage of males and females was markedly different, and many of them possessed feathers richly glossed with metallic colours, particularly on the wing-spot or speculum, which formed an important feature for purposes of classification.

Mr. Foster’s paper was illustrated by fifty lantern-slides, and the distinguishing features of the various species were pointed out, as well as their nests and nesting habits.

The President, Messrs. Joseph Skillen and R. J. Welch spoke in laudatory terms of the lecturer's treatment of the subject.

A FIELD-DAY IN SPACE.

The third ordinary meeting of the Winter Session was held in the Museum, College Square N., on Tuesday evening, January 13th, 1925, the President (Mr. J. A. S. Stendall, M.B.O.U.) in the chair.

Mr. Charles E. Kerr, B.A., the lecturer for the evening, dealt in a general manner with the bodies met with in space, and illustrated their characteristics by typical examples. The means by which we derive our knowledge of the starry heavens formed a suitable introduction to the subject, and it was made clear that the astronomer was not necessarily a "star-gazer." Taking his audience on a preliminary tour through the precincts of the solar system, Mr. Kerr introduced them to different types of planets and their stages of evolution. Here also they "bagged" specimens of comets and meteors, and finally they proceeded to the sun to gather that fundamental knowledge necessary for interpreting the message that light brings from the distant confines of the universe.

Leaving the purely "suburban" area of the solar system far behind, the lecturer proceeded into the depths of space, and the first halt was in the constellation Orion. A discussion of real and apparent association as evidenced in constellations and star systems led naturally to the so-called "fixed" stars, which were shown not to be fixed at all. The stars Betelgeuse and Rigel furnished material for interesting information, and the Great Nebulae formed an introduction to the subject of the nebulae in general. Beautiful photographs of the different types were shown—the bright and dark nebulae, the diffuse, planetary, and spiral.

Sampling different constellations, examples of the many varieties of stars were given—the giants and dwarfs, the binaries, the double stars, the variables, eclipsing, cepheid, and long period.

Excellent lantern slides of the occupants of the solar system assisted in making a difficult subject intelligible. A feature of the lecture was that, with the exception of a star chart, every slide was a real photograph of some heavenly body.

The President, Rev. J. F. Shiels, and Messrs. James Loughridge, Joseph Skillen, D. J. Carpenter, W. R. Robinson, and George Park took part in a very interesting discussion which followed.

THE ROMANCE OF THE WILD-FLOWER.

The fourth winter meeting of the Club was held in the Museum, College Square N., on Tuesday evening, January 27th, the President (Mr. J. A. S. Stendall, M.B.O.U.) in the chair, when the Rev. E. M. Gumley, B.A., B.D., Honorary Secretary of the Route Naturalists' Field Club, read a paper on "The Romance of the Wild-flower."

Mr. Gumley said he was dealing with a little world in itself, which had some external points of likeness to the big world of man. It had its races, families, tribes, etc., for which it was much concerned in finding residential quarters. It was also concerned with the realms of commerce, pharmacy, history, art, and poetry, and it had its quota of heroes, villains and parasites. Coming more particularly to the members of the plant world we are struck by their strange names. Some are named from their fancied likeness to other well-known natural objects, many go back to pre-Christian times, and embody classical legend, while others named by the mediæval monks were dedicated to some saint or were called after saintly qualities.

In the sphere of plant ecology, instances were given of plants which show preference for water, marsh, bog, sea-shore, mountain or woods and shady places. Examples were given from Mr. Gumley's own observation of plant migration and immigration. The use of plants in pharmacy was touched on, and the commercial value of plants from which dyes are obtained was pointed out. The wild-flower in art was illustrated by a reference to Gothic architecture, where its influence has been most lasting. In history attention was confined to the three national emblems—the thistle, rose and shamrock. In poetry almost everyone who had written verse drew inspiration from the flowers.

The paper was illustrated by a fine series of lantern slides, and the Club's appreciation was voiced by the President, and Messrs. S. A. Bennett, Joseph Skillen, R. J. Welch, George E. Reilly and B. Murray.

ARE THE CONTINENTS FLOATING?

The fifth ordinary meeting of the Club was held in the Museum, College Square N., on Tuesday evening, February 17th. The President (Mr. J. A. S. Stendall) was in the chair, and suitably introduced the lecturer, Mr. J. K. Charlesworth, D.Sc., M.R.I.A., Professor of Geology, Queen's University, Belfast.

Professor Charlesworth said that Newton determined the density of the earth to be 5.5. Since the average density of the surface rocks forming the continents is about 2.65 the interior of the earth must clearly have a much higher density than that possessed by the earth as a whole. It has, therefore, long been held that the earth is composed of layers of different densities, an outer layer termed *Sal*, a lower one *Sima* and a deeper one *Nife*. The *Sal* is confined, probably exclusively, to the continents, the floor of the oceans being formed of *Sima*. The continents, therefore, would appear to be slabs of *Sal* on a substratum of *Sima*. There are many reasons for believing that the mass of the continents which rises above the general level of the earth is compensated by a mass defect; in other words, that the bottom of the continental slab projects downwards into the *Sima*, the lighter *Sal* slabs being partially submerged in the heavier *Sima*.

Since the temperature increases into the interior of the earth at an average rate, at least so far as the surface layers are concerned, of, say, 1 degree C. for every 50 miles, the bottom of the continental slabs will lie at a depth which will coincide approximately with the depth at which the *Sima* begins to melt. From considerations of the relative densities of the *Sal* and *Sima* rocks it is thought that the continental slabs will be immersed in *Sima* to a depth of about six-sevenths of their thickness, like tabular icebergs in the sea.

With regard to these views geologists in general are agreed. But there agreement ends. It is held by one great school, with probably an increasing number of adherents, that tidal and other forces cause a very slow drift of the continental slabs westward and towards the equator. In this way it is thought North and South America have drifted off from Europe and Africa, of which they at one time formed part, thereby producing the Atlantic depression floored by *Sima*. It is urged in support of this view

that the outlines and geological build of the two sides of the Atlantic are in agreement. The similarity in outline can be readily perceived on a globe; the extent of identity and agreement of the geological structure is, however, a subject of dispute among geologists.

This theory is further applied to the elucidation of problems in connexion with the distribution of animal and plant life in the present and in the geological past. The occurrence of similar forms of life on continents now widely separated from each other has been previously explained by supposing the existence of "land bridges" over the sites of the separating oceans, and across which the flora and fauna migrated. The new hypothesis, however, accounts for the similarity of these widely separated forms by drifting together into contact the continents on which they are found. The hypothesis of drifting continents is at present still the subject of critical discussion. The decision is not yet.

The lecture was followed by a keen discussion, which was taken part in by the President, Dr. R. Lloyd Praeger, M.R.I.A., Dublin, and Messrs. S. A. Bennett, Nevin H. Foster, and Charles E. Kerr.

THE ZOOLOGY OF ETHNOGRAPHY.

The sixth meeting of the Winter Session was held in the Museum, College Square N., on Tuesday evening, March 10th. The President (Mr. J. A. S. Stendall) occupied the chair.

The lecturer, Mr. Samuel Freeland, of the City Museum Staff, dealt in a very interesting manner with "The Zoology of Ethnography." He introduced his subject by defining ethnography as "that branch of the general science of man descriptive of the manners and customs of particular peoples, especially of those races who have no written records." Having pointed out how some races, e.g. the Eskimo, are more dependent on animals than others, he showed examples of articles of clothing and ornamentation made from the skins, fur, bones, and teeth of animals. Feather ornamentation was explained, and the Hawaiian feather cloak in the municipal collection was exhibited.

Fish and reptile products were then dealt with, and an account was given of the carved representations of animals on their utensils and totem poles for which the Haida Indians are famous.

The discussion at the close was joined in by the President and Messrs. J. Skillen, R. S. Lepper, R. J. Welch, and A. M'I. Cleland.

Mr. D. J. Carpenter presented his report as representative of the Club at the Conference of delegates of Corresponding Societies of the British Association.

STRANGFORD LOUGH.

The seventh and concluding meeting for the winter was held in the Museum, College Square N., on Tuesday evening, March 31st. The President (Mr. J. A. S. Stendall) was in the chair.

The Geology of Strangford Lough was described by Mr. A. M'I. Cleland, its Archaeology by Mr. Joseph Skillen, its Botany by Mr. S. A. Bennett and Captain Chase, and its Zoology by Mr. James Orr.

The addresses were illustrated by lantern slides, and were spoken to by Messrs. H. C. Lawlor and R. J. Welch.

ANNUAL MEETING.

The Annual Meeting was held in the Museum, College Square N. on Tuesday, April 21st, at 8 p.m., the President (Mr. J. A. S. Stendall) in the chair.

The following Reports were presented:

ANNUAL REPORT.

The Committee has pleasure in submitting its Sixty-second Annual Report, as follows:—

During the year 26 Ordinary Members resigned, and 2 Honorary and 7 Ordinary Members died. The two Honorary Members—the Rev. Robert Workman and Mr. George Donaldson—were the last survivors of the little band of young men who, in 1863, established the Club.

The names of several Members whose subscriptions were unpaid for two years have been removed from the Roll. 1 Corresponding Member and 57 Ordinary and 18 Junior Members were elected. The Membership now consists of 7 Honorary, 1 Corresponding, 2 Life, 631 Ordinary and 86 Junior, making a total of 726.

Eleven meetings of Committee were held during the year, at which the attendances were as follows:—

Robert Bell	... 9	J. R. H. Greeves	... 3
S. A. Bennett	... 5	R. S. Lepper	... 10
Miss S. Blackwood	... 10	S. M. Macoun	... 4
A. A. Campbell	... 11	Rev. W. R. Megaw	... 5
D. J. Carpenter	... 9	James Orr	... 11
N. Carrothers	... 10	T. E. Osborne	... 8
Capt. Chase	... 7	Miss Sayers	... 6
A. M'I. Cleland	... 10	Joseph Skillen	... 9
W. M. Crawford	... 9	J. A. S. Stendall	... 11
Dr. Deans	... 7	R. J. Welch	... 6

Seven Summer Field Excursions were held:—

Garron Point	... 31st May	... 50 Present.
Templepatrick (½ day)	... 14th June	... 70 "
Toomebridge	... 28th June	... 27 "
Ballycastle (3 day)	... 12th to 14th July	... 21 "
Glenoe (½ day)	... 26th July	... 62 "
Silent Valley	... 23rd August	... 103 "
Ballyhornan	... 6th September	... 51 "

On each occasion the Club was favoured with good weather.

Reports of the Sections will be printed in the Proceedings.

The Annual Conversazione, held in the Assembly Hall, Fisherwick Place, on 21st October, was very largely attended by Members and their friends. As usual, many of our Members tabled interesting exhibits.

Seven meetings were held during the Winter Session, when the following lectures were delivered and papers read, abstracts of which will be printed in the Proceedings:—

1924

November 25—Presidential Address: "The Flight of Animals."

December 16—"The British Geese, Swans, and Ducks," Nevin H. Foster, F.L.S., M.R.I.A., M.B.O.U.

1925.

January 13—"A Field-day in Space," Charles E. Kerr B.A.

January 27—"The Romance of the Wild-flower," Rev. E. M. Gumley, B.A., B.D.

February 17—"Are the Continents Floating?" J. K. Charlesworth, D.Sc., M.R.I.A.

March 10—"The Zoology of Ethnography," Samuel Freeland.

March 31—"Strangford Lough: its Natural and Archaeological Features," A. M'I. Cleland, S. A. Bennett, B.A., B.Sc., Captain Chase, M.C., M.A., James Orr, and Joseph Skillen.

All these meetings were well attended. Mr. A. R. Hogg acted most satisfactorily as our lanternist.

Mr. D. J. Carpenter represented the Club at the Annual Conference of Delegates of Corresponding Societies of the British Association. His report will be printed in the Proceedings.

We regret that our Honorary Treasurer, Mr. T. Edens Osborne, after four years' unselfish devotion to the duties of his office, has been compelled, for various reasons, to resign. We tender to him our warm thanks for his services, and we bespeak for his successor the hearty co-operation of our Members.

We desire to express our thanks to Mr. Francis Joseph Bigger, an ex-President of the Club, the Rev. C. F. Newell and Mrs. Newell, and the Rev. Alfred Turner, for help in connexion with our excursion to Templepatrick; to Mr. Francis Grant for courtesy extended to the Club at Toomebridge, and to Mr. M'Illdowie, Resident Engineer, for taking charge of our large party on the occasion of our visit to the Silent Valley. We also acknowledge our indebtedness to the Press for publishing reports of our activities, and our thanks are due to the London, Midland and Scottish Railway Co., and the Co. Down Railway Co. for facilities courteously afforded in connection with our excursions.

J. A. SIDNEY STENDALL, President.

A. ALBERT CAMPBELL	} Hon.
THOMAS M. DEANS	
	} Secretaries.

DECEASED MEMBERS.

Rev. Robert Workman.

Mr. Franklin M. Walker.

Mr. William G. Mackenzie.

Mr. F. W. Lane.

Mr. Andrew W. Stewart.

Mr. W. R. Pim.

Mr. George Donaldson.

Mr. Thomas Ward Montgomery.

HONORARY LIBRARIAN'S REPORT.

The use made by Members of the Library continues much as in other years. The limited accommodation and want of facilities of access are the chief obstacles to a greater use being made of the many interesting publications received from Exchanging Societies.

A list of exchanges with other Clubs and Societies will be found on another page.

W. M. CRAWFORD, *Hon. Librarian.*

REPORT OF JUNIOR SECTION.

The Membership of the Junior Section now stands at 86, the number of new Members for year being 18.

During the summer the following Excursions were held:—The Lagan, Carr's Glen, The Gobbins and Cave Hill Quarries, at which Mr. R. Welch and Mr. S. A. Bennett acted as conductors.

Each Member received the programmes of the Club's excursions and lectures, the latter being regularly attended by many.

The Section's exhibits at the *Conversazione* were on a larger scale than in previous years and were of a most interesting and varied character.

S. BLACKWOOD, *Hon. Secretary.*

REPORT OF BOTANICAL SECTION.

This Section consists at present of 32 Members.

During the summer of 1924 excursions were made to the following districts:—

Cloughfin on May 17th.
Carr's Glen on June 14.
Squire's Hill on June 21st.
Magheramorne on July 5th.

There was an average attendance of about a dozen members.

S. A. BENNETT, B.A., B.SC., *Hon. Sec.*

REPORT OF GEOLOGICAL SECTION.

The Section has had a very successful Summer Session, making five visits in all, viz., Cloghfin Port, Upper Carr's Glen, Squire's Hill, Magheramorne, and Tardree. All the excursions were well attended, good work being done by the various collectors. The camera was also put to good use, particularly at Cloghfin Port and Tardree.

As the Members journeyed to Tardree by charabanc, it was possible to bring back excellent specimens of Tardree stones. Some of these were subsequently sent to Burslem Technical School and Cheltenham College.

In all their excursions the Members had the great advantage of the company of Mr. R. Bell, who, with his usual generosity, placed his intimate knowledge of the various localities at the disposal of every individual.

The funds of the Section show a slight debit balance, due to loss on the Tardree visit, but this will no doubt be wiped out during the forthcoming session.

A. M'I. CLELAND, *Hon. Secretary.*

Dr. Hon. Treasurer's Account for the Year ending 31st March, 1925.

To Balance from year 1923-24	...	...	£43 17 5	By Printing and Stationery	...	£40 8 4
" Subscriptions paid in advance for year 1925-26	...	...	130 0 0	" Printing of Proceedings, 1922-23	...	50 0 0
" at 5s	...	...	...	" Postage	...	32 4 11
" Subscriptions paid in advance for year 1925-26	...	...	...	" Hire of Museum Rooms	...	7 5 0
and 1926-27—18 at 5s	...	...	4 10 0	" Hire of Lantern	...	7 0 0
" 22 Entrance Fees	...	...	5 10 0	" Fire Insurance	...	0 10 0
" Affiliation Fee. Route Naturalists' Field Club	...	...	0 5 0	" Delegate to British Association	...	2 2 0
" Donation from Mr. Thos. Greer towards cost of	...	...	5 0 0	" Subscription—"English Naturalist" Year 1925	...	0 15 0
coloured prints of Lepidoptera	...	...	1 5 9	" Grant to Junior Section	...	2 0 0
" Sales of Proceedings, Flora, etc.	...	...	3 16 4	" Donation to "Irish Naturalist" 1923-24	...	2 0 0
" Balance from Excursions	...	...	...	" Addressing Circulars, etc.	...	2 0 0
				" Incidental Expenses—Rubber Stamps for Sec-	...	8 18 6
				tional Secretaries, binding 2 Vols. "Irish	...	
				Naturalist," Telephone Calls, etc.	...	1 18 2
				" Expenses of Conversazione	...	3 18 7
				" Subscription to Dr. Haddon Testimonial	...	0 10 6
				" Cost of Die and Bronze Medals	...	11 18 0
				" Engraving Two Medals	...	0 14 0
				" Gratuities	...	1 12 6
				" Advertising of Conversazione, etc.	...	3 12 11
				" Balance carried forward to next Account	...	16 16 1
				In addition to this balance there remains an unexpended sum of £2 10s 3d in hands of Mr. George for postage account.		
			£194 4 6			£194 4 6

Audited and found correct.

THOS. EDENS OSBORNE, Hon. Treasurer.
W. M. CRAWFORD } Hon. Auditors.
JAMES ORR }

Mr. Robert Bell and Mr. Nathaniel Carrothers were elected Honorary Members, and twenty-five of the applicants for admission to ordinary membership, who had been recommended by the Committee, were elected.

Mr. Osborne's resignation of the Honorary Treasurership was taken advantage of to present him with a handsome silver cigarette case as a token of the esteem in which he was held by his fellow-members of Committee. Eulogistic speeches were made by the President, Rev. W. R. Megaw, and Messrs. A. M'I. Cleland, R. S. Lepper, and J. Skillen, and Mr. Osborne suitably responded.

On the motion of Mr. A. Albert Campbell, who had given previous notice, Rule V. was altered by adding to it the words—"That the President, Vice-President, General Secretaries, and Treasurer be *ex-officio* Members of Sub-committees."

The following Office-bearers were elected for Session 1925-26:—President, Mr. James Orr; Vice-President, Mr. W. M. Crawford; Honorary Secretaries, Mr. A. Albert Campbell and Dr. Thomas M. Deans; Honorary Treasurer, Mr. Alex. H. Davison; Honorary Librarian, Mr. R. S. Lepper; Honorary Recording Secretary, Mr. J. A. S. Stendall, Honorary Secretary of Botanical Section, Mr. S. A. Bennett; Honorary Secretary of Geological Section, Mr. A. M'I. Cleland; Honorary Secretary of Zoological Section, Mr. R. J. Welch; Honorary Secretary of Archaeological Section, Mr. Joseph Skillen; Honorary Secretary of Junior Section, Mr. D. J. Carpenter; Ordinary Members of Committee (retire 1926), Rev. W. R. Megaw, Capt. C. D. Chase, Miss W. J. Sayers; (retire 1927), Mr. N. Carrothers, Mr. Robert Bell, Mr. J. R. H. Greeves; (retire 1928), Mr. T. E. Osborne, Mr. Charles E. Kerr, Mr. S. M. Macoun.

REPORT OF THE CLUB'S DELEGATE TO CONFERENCE OF CORRESPONDING SOCIETIES OF THE BRITISH ASSOCIATION.

The chief feature of the Conference, which was held at Wembley on 22nd July, 1924, was an address on "The Preservation of Sites and Monuments" by Professor John L. Myers.

The lecturer stated that it was a matter of duty to care for old monuments, not in amateur fashion, but as an object

of civic administration. To do this it is necessary to educate those in power by means of watchful public opinion, and to obtain agencies representing the public mind always kept in working order. Such agencies include legal measures, official agents with the authority of government behind them to enforce the laws, to keep a watchful eye on and schedule all sites and monuments, to prevent the destruction of rare birds' nests, etc., and public voluntary associations such as Field Clubs. The chief function of the last mentioned can only be to influence public opinion in the right direction.

Professor Myers reviewed the growth of public opinion, with the various legal measures passed, so as to see exactly what remains to be done.

Calling for the public care are four classes of objects:—

- (1) Ancient buildings, cronlechs, forts, etc., raised by human agency;
- (2) Sites of historic human achievements such as battlefields;
- (3) Places of natural beauty preserved for the public pleasure; and
- (4) Places of scientific interest such as—
 - (a) Instructive geological sections,
 - (b) Haunts of wild life, such as salt marshes, etc., where the natural fauna and flora are conserved.

As examples of good work done by the National Trust in respect of the last category were instanced the procuring of:—

- (a) Wicken and Burwell Fens—Haunts of rare plants and animals.
 - (b) Leigh Woods, near Bristol—Famous for its nightingales.
 - (c) Blakeney Point, Norfolk—Abode of sea birds, etc.
 - (d) Ruskin Reserve, near Abingdon.
- And as late as 1924, the securing of
- (e) Farne Islands—Celebrated breeding ground of sea birds.
 - (f) Hatfield Forest—A famous deer-park.

France was the first to take action, and in

1810—Statute for expropriation of National Monuments, passed.

1830—Official inspector general of such monuments elected.

1837—Guizot's " *Classements des Monuments* " was secured.

1887—Ancient Monuments Act passed.

In Greece a new kingdom legislation began in 1834.

RECORD PROGRESS IN BRITAIN.

1839—Oxford Architectural and Historical Society and Cambridge Antiquarian Society founded.

1869—Historical Manuscripts Commission established.

1873—Sir John Lubbock's Ancient Monuments Bill introduced, but only placed on Statute Book in 1882. This Bill provided for—(1) The compiling of a schedule of monuments by voluntary advice; (2), the voluntary transfer by its owner to the guardianship of the Commissioner of Works with right of access, and its upkeep by voluntary contributions made through the Commissioners; (3), the purchase of monuments by the Commissioners, who, however, were granted no public funds for the purpose; (4), an Inspector of Ancient Monuments, but without a salary.

1884—Chester Improvement Act secured the right to prevent encroachment by private individuals on the city walls, and procured local responsibility for the conservators of ancient monuments.

1892—Irish Ancient Monuments Act, extending the authority of the Commission of Works to monuments other than churches, and assigning an annual grant of £1,000 for upkeep.

1895—Establishment of A National Trust for Places of Historic Interest or Natural Beauty.

1899—Edinburgh Corporation Act empowered the City Council to prevent disfiguration of important sites by advertisements.

1900—Second Ancient Monuments Act passed.

1913—Third Ancient Monuments Consolidation Act increasing the powers of the Commissioners of Works, the inclusion of other classes of buildings, and their preservation at the expense of the public.

That there is need for constant vigilance is instanced by the following:—

Last year the Marconi Company intended installing a wireless station at Avebury, right in the middle of the

megalithic site. The Admiralty also intended to set up scientific equipment at Holmbury Hill, but fortunately the authorities concerned were persuaded as to the undesirability of the procedure.

The War Office are making an attempt to keep the public out of Lulworth Cave, Dorset, a place exceptional for its beauty and its classic exposure of Jurassic strata. Its fate, however, is still in the balance.

D. J. CARPENTER.

CLUB MEDALLISTS.

1923. Mr. WILLIAM SWANSTON, F.G.S., joined the Club in 1867 (fifty-seven years ago). He became a member of Committee in 1869, and was Honorary Secretary from 1875 till 1890 (fifteen years), when he became Honorary Librarian. He was Vice-President for Sessions 1891-92 and 1892-93, and President for Session 1893-94. In 1921 he was elected an Honorary Member. His lectures and papers at our winter meetings include the following:—

Dec. 28, 1870.—The Echinodermata.

March 10, 1875.—Graptolites, with special reference to those found in Co. Down.

March 14, 1877.—The Correlation of the Silurian Rocks of Co. Down. (Published as an Appendix to Proceedings for 1876-77.)

Dec. 17, 1878.—The Supposed Pliocene Fossiliferous Clays near the Shore of Lough Neagh.

Feb. 21, 1882.—Recent Discoveries in the Lower Palaeozoic Rocks.

Dec. 16, 1884.—The Origin and History of the Lignites and Silicified Wood of Lough Neagh.

Jany. 29, 1889.—Photography as an aid to the Club's Work.

1924. Mr. NEVIN HARKNESS FOSTER, F.L.S., M.R.I.A., M.B.O.U., was elected to membership of the Club in 1899. He served on the Committee from 1903 till 1917, was Honorary Secretary from 1903 till 1905, Vice-President from 1906 till 1908, President for Session 1909-10, and Honorary Treasurer from 1913 till 1917. He acted as one of the Editors of the Proceedings in most years from 1903 till 1917. His lectures and papers at our winter meetings include the following:—

- Nov. 29, 1907.—An Elementary Outline of Zoology.
 Nov. 16, 1909.—The Birds of Hillsborough.
 Dec. 6, 1911.—A Talk about Birds. (This Paper was
 read at the first meeting of the Junior Section.)
 Dec. 13, 1911.—The Fauna of Cavan.
 March 17, 1914.—How to Recognise our Common
 Woodlice.
 Jany. 16, 1917.—The Mourne Mountains.
 Jany. 18, 1918.—The Woodlice of Ulster. (Published
 as an Appendix to Proceedings 1917-1918.)
 March 21, 1922.—Birds: Extinct and Living.
 Jany. 29, 1924.—The British Gulls, Terns and Skuas.

LIST OF EXCHANGING SOCIETIES, 1924-1925.

An asterisk (*) indicates receipt of Proceedings during the
 year.

- Belfast—Committee of Public Libraries.
 Natural History and Philosophical Society.
 Presbyterian Historical Society of Ireland.
 Birmingham—Natural History and Philosophical Society.
 *Bournemouth—Natural Science Society.
 *Brighton and Hove—Natural History and Philosophical
 Society.
 Bristol—Naturalists' Society.
 Cardiff—Naturalists' Society.
 *Chester—Society of Natural Science, Literature and Art.
 *Dublin—Royal Irish Academy.
 * Royal Society of Antiquaries of Ireland.
 Royal Zoological Society of Ireland.
 *Dumfriesshire and Galloway—Natural History and Anti-
 quarian Society.
 *Dundalk—County Louth Archaeological Journal.
 Eastbourne—Natural History, Photographic and Literary
 Society.
 Edinburgh—Geological Society.
 *Essex—Field Club.

- *Glasgow—Royal Philosophical Society.
- Halifax, Nova Scotia—Institute of Science.
- *Hertfordshire—Natural History Society and Field Club.
- *Isle of Wight—Natural History Society.
- Leyden—Rijks Ethnographisch Museum.
- *Liverpool—Geological Society.
- Naturalists' Field Club.
- *London—British Association.
- * British Museum.
- * Geologists' Association.
- * Linnean Society.
- *Manchester—Microscopical Society.
- *Marlborough College—Natural History Society.
- Mexico—Instituto Geologico.
- Newcastle-upon-Tyne—Natural History Society of North-
umberland, Durham and Newcastle-upon-Tyne.
- *North Staffordshire—Field Club.
- Norwich—Prehistoric Society of East Anglia.
- Oxford—Ashmolean Natural History Society.
- *Perthshire—Society of Natural Science.
- *Toronto—Royal Canadian Institute.
- *Torquay—Natural History Society.
- U.S.A.
- Boston, Mass.—Society of Natural History.
- Chicago—Academy of Sciences.
- * Field Museum of Natural History.
- *Cincinnati—Lloyd Library.
- Madison, Wis.—Wisconsin Academy of Sciences, Arts and
Letters.
- *Milwaukee, Wis.—Public Museum.
- *New York, N.Y.—Academy of Sciences.
- *Philadelphia—Academy of Natural Sciences.
- Portland, Maine—Society of Natural History.
- *Rochester, N.Y.—Academy of Science.
- *St. Louis, Mo.—Missouri Botanical Garden.
- *San Francisco, Cal.—California Academy of Sciences.
- Staten Island, N.Y.—Institute of Arts and Sciences.
- *Tuft's College, Mass.—Eaton Memorial Library.
- *Washington—U.S. Geological Survey.
- * Government Printing Works.
- * National Museum.

RULES

OF THE

Belfast Naturalists' Field Club.

As amended at Annual Meeting held 21st April, 1925.

I.

That the Society be called "THE BELFAST NATURALISTS' FIELD CLUB."

II.

That the object of this Society be the practical study of Natural Science and Archaeology in Ireland.

III.

That the Club shall consist of Ordinary, Junior, Life, Corresponding, and Honorary Members. Not more than twenty-five Ordinary Members shall be elected half-yearly. Ordinary Members shall be proposed and seconded by two existing Members on a Nomination Form to be obtained from the Honorary Secretaries. These proposals shall come before the Committee of the Club, who shall vote by ballot for or against acceptance. The names of the accepted candidates shall be submitted for election half-yearly—at the Annual Meeting in April and the Annual Conversazione in October.

Ordinary Members shall pay annually a subscription of Five Shillings, and shall on election pay an Entrance Fee of Five Shillings. Members who are twelve months in arrear in their subscriptions shall not receive any further circulars or other printed matter, and those who are two years in arrear shall cease to be members of the Club.

That the composition fee for Life Membership be Four Guineas.

Junior Members, who must be between the ages of twelve and twenty-one years, may be elected at any Meeting of the Club, and shall not be required to pay any Annual Subscription from twelve to eighteen; from eighteen to twenty-one they shall pay an Annual Subscription of Two Shillings and Sixpence, which shall be wholly used for the benefit of the Junior Section. Junior Members shall not receive any printed matter except the usual notices; shall not have the power to vote; and shall not borrow books from the Club's Library without special permission from the Librarian. On attaining their majority they shall become Ordinary Members, and shall pay an annual subscription of Five Shillings (5s).

IV.

That the Honorary and Corresponding Members shall consist of persons of eminence in Natural Science, or who shall have done some special service to the Club; that such Members may be nominated by any Member of the Club, and on being approved by the Committee, may be elected at any subsequent Meeting of the Club by a majority of the votes of the Members present. That not more than two

Honorary Members be elected in any one year. That Corresponding Members be expected to communicate a paper once within every two years.

V.

That the Officers of the Club be annually elected and consist of a President, Vice-President, Treasurer, Librarian, one or two Secretaries, and a Recording Secretary, together with the Secretaries of the various Sections of the Club. That the office of President or that of Vice-President shall not be held by the same person for more than two years in succession. That the President, Vice-President, General Secretaries, and Treasurer be *ex-officio* members of Sub-Committees.

VI.

That the General Committee shall consist of the above-named officers with nine ordinary members of Committee, and shall hold at least eight meetings during the year; five persons to form a quorum.

That three ordinary members of Committee shall retire annually in order of seniority, those retiring being ineligible for re-election for one year. Should any ordinary member of Committee fail to attend at least three of the Committee meetings held during the year his or her place may be considered vacant and another member elected to fill the position. No ordinary member of Committee shall hold the post of Secretary in any of the Sections. That in the event of a vacancy occurring in the General Committee a new member may be co-opted to fill such vacancy for the remainder of the year.

That nominations for ordinary members of Committee shall be sent in writing to the Secretaries on or before the 21st day of March in each year. That the privilege of nominating members of Committee shall be held by all Ordinary and Life Members of the Club. That the names of those members so nominated shall be published on the circular convening the Annual Meeting, at which the Ordinary Members of Committee shall be elected by ballot. That should the necessity arise the retiring members of Committee shall be balloted for.

VII.

The Committee may from year to year appoint Sectional Secretaries and Committees, as may be considered desirable, to further original investigations in any one or more departments of the Club's work. Members desiring to join any Section shall pay an additional subscription of One Shilling to the Secretary of the Section (such subscription to be used for the benefit of the Section). No financial responsibility to be incurred by any Sectional Secretary, Sectional Committee, or any Officer of the Club without the previous approval of the Club's Committee. The Junior Section to have a Committee composed of Six Members of the Club, the Chairman to be annually appointed by the General Committee.

VIII.

That the members of the Club shall hold at least Six Field Meetings during the year, in the most interesting localities, for investigating the Natural History and Archaeology of Ireland. That the place of meeting be fixed by the Committee, and that five days' notice of each Excursion be communicated to Members by the Secretaries. That each of the Sectional Secretaries shall be made responsible for

the running of one Regular Excursion, the programme to provide study in the subject appertaining to the Section, and that any additional Special Excursions shall be arranged by the Secretaries of the Sections concerned.

IX.

That regular Monthly Meetings be held during the Winter Session from November till April, inclusive, for the purpose of reading Papers; such Papers as far as possible to be original, and to treat of the Natural History and Archaeology of the district. That the Papers to be read be secured by a Standing Organising Committee, consisting of the Hon. Secs. of the Club, together with the Sectional Secretaries and a Chairman. That between the Regular Monthly Meetings of the Club Special Meetings open to all Members of the Club may be held, at which Papers of specialised interest would be discussed. That the Sectional Secretaries shall each be responsible for the providing of a programme for one Regular and one Special Meeting, one Regular and one Special Meeting to be arranged by the Hon. Secs. Any extra Meetings shall be arranged by the Organising Committee, if desired. That the programme for the Winter Session shall be completed by the date of its First Meeting and issued to all Members. That each notification announcing a Regular Meeting or Excursion shall also serve to notify Members of the next Special Meeting or Excursion.

X.

That the Committee shall, if they find it advisable, offer for competition Prizes for the best collection of scientific objects of the district; and the Committee may order the purchase of maps, or other scientific apparatus, and may carry on geological and archaeological searches or excavations, if deemed advisable, provided that the entire amount expended under this rule does not exceed the sum of £10 in any one year.

That the General Committee may offer from time to time such prize or prizes as they may deem desirable for competition among Schools in or near Belfast.

XI.

That the Annual Meeting be held during the month of April, when the Report of the Committee for the past year, and the Treasurer's Financial Statement shall be presented, the Committee and Officers elected, Bye-laws made and altered, and any proposed alterations in the general laws, of which a fortnight's notice shall have been given, in writing, to the Secretary or Secretaries, considered and decided upon. The Secretaries to give the Members due notice of each intended alteration.

XII.

Members of other Irish Field Clubs, residing temporarily or permanently in or near Belfast, may be enrolled as Members of the Club without election or entrance fee on production of a voucher of membership of another Club, and without subscription for the current year, on production of a receipt showing that such subscription has been paid to another Club. Failing the production of such receipt, the usual subscription for the current year to be paid to the Treasurer

on enrolment. The names of Members so admitted to the Club to be published with the notice of meeting following the date of their enrolment.

XIII.

That, on the written requisition of twenty-five members, delivered to the Secretaries, an Extraordinary General Meeting may be called, to consider and decide upon the subject mentioned in such written requisition.

XIV.

That the Committee may be empowered to exchange publications and reports, and to extend the privilege of attending the Meetings and Excursions of the Belfast Naturalists' Field Club to Members of kindred societies, on similar privileges being accorded to its Members by such other societies.

RULES FOR THE CONDUCTING OF EXCURSIONS.

I. The excursion to be open to all Members, each one to have the privilege of introducing two friends. The time for commencing as many as possible of the Half-day Summer Excursions to be not prior to 2 p.m.

II. A Chairman to be elected as at ordinary meetings.

III. One of the Secretaries to act as Conductor, or, in the absence of both, a Member to be elected for that purpose.

IV. No change to be made in the programme, or extra expense incurred, except by the consent of the majority of the Members present.

V. No fees, gratuities, or other expenses to be paid except through the Conductor.

VI. Every Member or Visitor to have the accommodation assigned by the Conductor. Where accommodation is limited, consideration will be given to priority of application.

VII. Accommodation cannot be promised unless tickets are obtained before the time mentioned in the special circular.

VIII. Those who attend an excursion without previous notice will be liable to extra charge, if extra cost is incurred thereby.

IV. No intoxicating liquors to be provided at the expense of the Club.

LIST OF MEMBERS

For the year ending 31st March, 1925.

Any Change in the Address of Members should be at once notified to the Honorary Secretaries.

The Dates prefixed to Members' names signify date of Election.

Honorary Members.

- 1893. Bell, Robert, 64 Newington Avenue.
- 1892. Carrothers, Nathaniel, 145 Stranmillis Road.
- 1914. Charlesworth, Professor John K., D.Sc., Ph.D., F.G.S., Queen's University, Belfast.
- 1899. Foster, Nevill H., F.L.S., M.R.I.A., M.B.O.U., Hillsborough, Co. Down.
- 1868. Knowles, W. J., M.R.I.A., F.R.S.A.I., Flixton Place South, Ballymena.
- 1866. Swanston, W., F.G.S., Farm Hill, Dunmurry.
- 1902. Scharff, Robert F., B.Sc., Ph.D., F.L.S., M.R.I.A., F.R.S.A.I., Knockranny, Bray, Co. Wicklow.
- 1922. Vinycomb, John, M.R.I.A., F.R.S.A.I., 59 Thornton Avenue, Streatham, London, S.W.
- 1880. Welch, R. J., M.Sc., M.R.I.A., 49 Lonsdale Street.

Corresponding Member.

- 1923. The Honorary Secretary of the Route Naturalists' Field Club.

Life Members.

- 1903. Stelfox, A. W., A.R.I.B.A., M.R.I.A., 14 Clareville Road, Rathgar, Dublin.
- 1893. Wilson, Alec G., J.P., M.R.I.A., Croglin, Ballyaughlis.

Ordinary Members.

- 1923. Acheson, F. W., 37 Osborne Park.
- 1924. Acheson, Miss R., Bayview, Larne Harbour.
- 1924. Adams, Andrew, 68 Willowbank Street.
- 1921. Adams, John, Auburn, Cranmore Park.
- 1907. Adams, Rev. W. A., B.A., The Manse, Antrim.
- 1922. Adamson, J. H., 70 Malone Avenue.
- 1915. Aird, Hugh, 10 King Street.
- 1917. Alderdice, R. Sinclair, F.C.I.B., 12a Linenhall Street.
- 1922. Alexander, K. M., 30 Kelvin Parade.
- 1923. Anderson, Hugh, Knocknagoney, Martinez Avenue.
- 1911. Anderson, Miss S. M., 4 Church View, Holywood.
- 1882. Andrew, J. J., L.D.S., R.C.S. (Eng.), 23 University Square.
- 1892. Andrews, Miss E., 10 Park Crescent, Tonbridge, Kent.

1912. Andrews, Miss E. J., Inla, Comber.
 1922. Andrews, J. D., Uraghmore, Comber.
 1912. Andrews, Dr. Marion B., D.P.H., Orsett, Derryvolgie Avenue.
 1913. Andrews, Michael C., F.R.G.S., F.R.S.G.S., do.
 1924. Arbuthnot, Miss D. Moya H., 9 Cranmore Park.
 1921. Ardis, R., A.M.I.E.E., 6 Marine Parade, Holywood.
 1921. Ardis, Harold, 6 Marine Parade, Holywood.
 1923. Armour, W. S., Ulsterville Cottage, Lisburn Road.
 1916. Armstrong, Miss Dorothy, M.Sc., Corlea, Somerton Road.
 1923. Armstrong, George A., B.A., 14 Kelvin Parade.
 1923. Armstrong, Miss Gertrude, Cloughfern, Islandmagee.
 1921. Ashworth, Rev. A. O., Marsdene, Cyprus Park, Bloomfield.
 1921. Ashworth, Mrs., do.

 1916. Baillie, Robert, Elleslie, Ravenhill Park
 1907. Baillie, W. T., 26 Green Road, Knock.
 1922. Baird, Sir R. H. H., K.B.E., D.L., Park Lodge, Antrim Road.
 1921. Beaumont, Ivor, A.R.C.A., M.S.A., F.R.S.A., F.I.B.D.,
 Municipal College of Technology.
 1905. Beck, Miss, 1 Derryvolgie Avenue.
 1913. Bell, D. M., Carragh Ard Lodge, Newcastle, Co. Down.
 1923. Bell, David S., High Street, Carrickfergus.
 1896. Bell, E. George, Solitude, Lurgan.
 1922. Bell, John, 10 Garfield Street.
 1908. Bennett, S. A., B.A., B.Sc., Campbell College, Belmont.
 1924. Beatty, C., J.P., Ledlie Villia, Coalisland.
 1922. Berringer, Joseph, 36 North Street.
 1924. Berry, Col. R. G. J. J., M.R.I.A., F.R.S.A.I., Ardaluin, New-
 castle, Co. Down.
 1884. Bigger, F. J., M.R.I.A., F.R.S.A.I., Ardriagh, Antrim Road.
 1914. Bird, Miss, 18 Connaught Mansions, Prince of Wales Road,
 Battersea Park, London, S.11.
 1898. Blackwood, Miss Sarah, 6 College Green.
 1922. Blackwood, Reginald W. H., J.P., 24 University Square.
 1924. Black, Robert A., Landscape Terrace, Crumlin Road.
 1923. Black, A. Hamilton, Lindesfarne, Holywood.
 1923. Blair, John T., 33 Ophir Gardens.
 1921. Blair, Mrs. J., 14 Cliftonville Avenue.
 1921. Bloom, H. M., The Hermitage, Marino.
 1921. Bowman, Miss A., 1 Rossmore Avenue.
 1922. Bowman, Robert R., 2 Osborne Drive, Bangor.
 1924. Bowen, Charles A., B.A., Campbell College.
 1923. Boyce, Mrs. 9 Cedar Avenue.
 1923. Boyd, James, Church Street, Ballymoney.
 1923. Boyd, Miss K. St. Clair, Chatsworth, University Road.
 1923. Boyd, James, Raleigh House, Queen Street.
 1924. Boyd, Richard R., 108 Percy Street.
 1893. Boyd, Miss E. S., 5 Brock Terrace, The Grange, Guernsey.
 1922. Boyd, J. St. Clair, Chatsworth, University Road.
 1894. Boyd, W. C., J.P., Thornhill, Farnham Road, Bangor.
 1917. Bradley, Mrs., Haypark House, Knock.
 1916. Bradley, Miss L. T., Haypark House, Knock.
 1923. Breakey, Rev. J. C., B.A., The Manse, Comber.
 1863. Brett, Sir Charles H., LL.D., Gretton Villa South, Belfast.
 1921. Brierley, J. C. A., M.Sc., 224 Cliftonville Road.
 1923. Broomhead, H., Mount Oriel, Newtownbreda.
 1922. Brown, James R., M.A., B.Sc., 80 Marlborough Park Central.

1923. Brown, W. P., LL.B., 34 Alliance Avenue.
 1923. Brown, Mrs. do.
 1883. Brown, Thomas, J.P., 102 Donegall Street.
 1923. Buckley, Miss, 4 Erin View, Greencastle.
 1923. Burling, E., 54 Ardenlee Avenue.
 1923. Burns, Hugh, 85 North Street, Lurgan.
 1923. Burns, Miss E., 13 Ponsonby Avenue.
 1899. Burrowes, W. B., F.R.S.A.I., Ballynafeigh House.
 1922. Bullick, E., Railway Street, Lisburn.
1909. Campbell, John, Albert Brickworks, Carrickfergus.
 1917. Campbell, James, Jennymount Mill.
 1921. Campbell, A. Albert, F.R.S.A.I., Drumnaferrie, Rosetta Park.
 1921. Campbell, Mrs. A. Albert, Drumnaferrie, Rosetta Park.
 1921. Campbell, Mrs. 20 Wellington Park Avenue.
 1891. Capper, J. Malcolm, 14 Linenhall Street.
 1923. Carpenter, D. J., A.R.C.Sc.L., 278 Cliftonville Road.
 1914. Carter, Charles S., 25 Donegall Street.
 1904. Carmody, Rev. Canon W. P., M.A., Lisburn.
 1923. Carrothers, E. N., Midland Railway, York Road.
 1892. Carson, J. C., 8 Wellington Place.
 1922. Cassidy, Wm., 5 Bawnmore Road.
 1923. Chambers, R.M., M.I. Mech.E., 126 Malone Avenue.
 1907. Chambers, W., 35 Cranmore Avenue.
 1920. Chandler, W. P., 1 Ailsa Terrace, Strandtown.
 1920. Chandler, Mrs. do.
 1919. Chase, Capt. C. D., M.C., M.A., Campbell College, Belmont
 1901. Cheyne, H. H., Roseneath, Bangor.
 1922. Christy, Wm., 3 Edenderry Gardens, Tennent Street.
 1920. Churchill, Miss, Inverary, Sydenham.
 1922. Clarke, George W., 39 Adelaide Park.
 1894. Cleland, Alex. M.I., 28 Green Road, Knock.
 1894. Cleland, Mrs. Annie, 28 Green Road, Knock.
 1890. Cleland, James A., Brooklyn, Holywood.
 1917. Close, R. M., M.R.I.A.I., 13 Donegall Square North.
 1925. Clouston, David, M.A., B.Sc., Queen's University.
 1921. Cowie, Henry, Midland Railway Co. (N.C.C.) Terminus, York Road.
1922. Cole, Francis J., Ardmara, Greenisland.
 1923. Colton, John M., Lisbawn, Hawthornden Road.
 1922. Corry, Hon. Cecil, Castle Coole, Enniskillen.
 1924. Cosgrave, John, F.L.A.A., Marsh's Buildings, Donegall Street.
 1925. Cosgrave, Mrs. Magee, Alliance Avenue.
 1921. Cousins, D., 4 Frederick Terrace, Malone Road.
 1923. Cowden, William, 46 Cliftonpark Avenue.
 1906. Cowie, James, Cushlewa, Jordanstown.
 1921. Crawford, W. M., B.A., F.E.S., F.Z.S., Orissa, Marlborough Park.
1921. Crawford, Lieut.-Col. F. H., C.B.E., Cloreen, University Road.
 1922. Cromie, A. G., Ulster Bank, Carlisle Circus.
 1922. Cromie, Miss Maude, do.
 1922. Crothers, Miss, 7 Easton Crescent, Cliftonville Road.
 1923. Crook, Rev. G. V., The Manse, Antrim.
 1921. Crymble, Mrs. S., 18 College Green.
 1913. Cunningham, Miss M. E., F.R.S.A.I., Glencairn.
 1884. Cunningham, Rt. Hon. Samuel, Fernhill.
 1924. Cupples, Miss Diana, 124 Malone Avenue.
 1924. Currie, Rev. W. J., B.A., Bangor.

1915. Cunningham, Josias, R.N.V.R., M.B.O.U., Fernhill.
1921. Curry, Wm., 5 Oakland Avenue, Bloomfield.
1921. Cuthbert, Rev. A., M.A., Rocklands Manse, Carrickfergus.
1923. Dales, Miss Annie, Easton Cottage, Easton Gardens.
1923. Dales, Miss Evelyn, Easton Cottage, Easton Gardens.
1923. Dales, Miss M., 14 Easton Crescent.
1924. Dallas, Miss, 2 Bloomfield Gardens.
1923. Dalzell, John, 12 Derlitt Street, Ballynafeigh.
1923. Davin, Miss Adelaide G., B.Sc., Glenmore Lodge, Lambeg.
1921. Davison, A. H., F.A.I., 32 Wellington Place.
1925. Dawson, Col. W. R., M.D., 26 Windsor Park.
1921. Deane, Arthur, M.R.I.A., F.R.S.E., Art Gallery and Museum, Belfast.
1924. Deans, Samuel, B.Sc., Mayfield, Donaghadee.
1919. Deans, T. M., LL.D., Academy House, Rosetta.
1891. D'Evelyn, A. M., M.D., Ballymena.
1925. Dickey, John, 71 Malone Avenue.
1925. Dickey, Dr. Wm., 86 Antrim Road.
1924. Dickie, Miss Cathleen, St. Brigid Studios, Holywood.
1921. Dinsmore, J. A. S., 28 and 30 Castle Place.
1922. Dobbin, Miss, 60 University Street.
1925. Dobbs, Archibald E., 40 Eglantine Avenue.
1921. Doggart, Henry, 24 Canterbury Street.
1921. Donaldson, Dixon, Dunoon, Islandmagee, Co. Antrim.
1922. Douglas, John, Helen's Bay.
1922. Dowling, J. T., Kildonan, Donegall Park Avenue.
1922. Downer, W. H. N., Arlington House, Cavehill Road.
1923. Douglas, Miss E., Maternity Hospital, Belfast Union.
1923. Duff, Miss Mary, Aghalee, Lurgan.
1908. Duncan, W., 54 Textile Buildings, Donegall Square South.
1921. Dunwoody, W. J., 10 Marine Parade, Holywood.
1921. Earls, Professor J., B.A., 31 Ravenhill Park.
1921. Earls, Miss Annie, Rosetta School, Belfast.
1916. Edwards, Mrs., 54 Ulsterville Avenue.
1884. Elliott, David, B.A., J.P., Ardroe, Bloomfield.
1923. Elliott, Miss Annie, B.A., Ardroe, Bloomfield.
1924. Elliott, Miss Isabel, 33 Sandhurst Drive.
1923. Elliott, Mrs., Duneane Manse, Randalstown.
1923. Ewart, Lavens M., The Banks, Ballyholme, Bangor.
1925. Erskine, Miss Nessie, 6 Cedar Avenue.
1923. Falconer, Miss, Ravenhill Road N. School.
1924. Fallon, Mrs., 25 St. James' Park.
1868. Faren, W., F.R.S.A.I., 11 Mountcharles.
1913. Ferguson, Samuel, St. Helen's Holland Park, Knock.
1924. Ferguson, Miss Elizabeth, Rosetta School.
1924. Ferguson, Mrs. G. W., Carnamenagh, Antrim Road.
1923. Fforde, Miss Georgina, Cloughfin, Islandmagee.
1897. Finlay, Miss A. M., 3 Old Nichol Street, Bethnal Green, London, E.C.
1906. Finlay, Arch. H., A.C.G.I., A.I.E.E., Willesden, Holywood.
1921. Fleet, Capt. H. G., Municipal College of Technology.
1903. Foster, Mrs. N. H., Hillsborough.

1911. Foster, Miss A. B., B.Sc., Y.M.C.A., William Street, Waterford.
 1923. Foster, Mr. A. R., B.A., Principal, Royal Academy, Cliftonville.
 1924. Frame, Miss H., 4 Glandore Street.
 1924. Frame, Miss M., 4 Glandore Street.
 1921. Freeland, Samuel, 23 Meadowbank Street.
 1892. Fulton, David, Arlington, Windsor Avenue.
 1921. Fulton, Wm., 44 Wellington Place.

 1904. Gaffikin, William, J.P., Notting Hill.
 1924. Gallagher, James, 72 Martinez Avenue.
 1922. Gallway, W. H., Shielavon, Ranfurly Avenue, Bangor.
 1892. Gamble, Miss, Lorne, Craigavad.
 1916. George, A. H., 22 Thorndale Avenue.
 1917. Gibson, Mrs., Bonnington, Lansdowne Road.
 1911. Gibson, Mrs. Joseph, Hollow Bridge House, Hillsborough, Co. Down.
 1921. Gibson, Wm. J., Montpelier House, Malone Road.
 1921. Gibson, Samuel, J.P., Summer Hill, Dunmurry.
 1923. Gilbert, T. S., Methodist College.
 1923. Gilchrist, David, 24 Ravenhill Park.
 1923. Gill, Miss Lillie, 16 Glendower Street.
 1923. Gillespie, Miss Kathleen, B.Sc., Loughview House, Whitehouse.
 1921. Gilliland, W. T., B.Sc., 7 Wellington Place.
 1924. Glasgow, Miss Margaret, M.Sc., 3 Botanic Avenue.
 1921. Glendinning, R. G., Jun., Lenoxvale.
 1923. Gloster, A. J., M.A., Royal Academical Institution.
 1923. Glynn, W. M., B.A., Friends' School, Lisburn.
 1905. Glover, James, The Glebe, Kirkcubbin, Co. Down.
 1921. Gore, W., F.R.S.A.I., Municipal College of Technology.
 1921. Graham, Thomas, 26 Alexandra Avenue.
 1922. Graham, David, Langford Lodge, Crumlin.
 1922. Graham, Miss M. E., 241 Sundridge Terrace, Mountpottinger.
 1924. Graham, Mrs. Sarah, 138 Dunluce Avenue.
 1891. Green, Mrs. Isaac, Hawthornden, Knock.
 1895. Green, W. A., F.R.S.A.I., 4 Salisbury Terrace, Chichester Park.
 1921. Green, H. P., Limehurst, Holland Park, Knock.
 1920. Greenham, Miss J. C., 44 Orient Gardens.
 1923. Green, R. W., Coondara, 41 Kingsmore Avenue.
 1923. Greer, Thomas, J.P., Curglasson, Stewartstown.
 1901. Greeves, J. Theodore, Nendrum, Knockdene Park.
 1917. Greeves, J. R. H., B.Sc., Altona, Strandtown.
 1901. Greeves, W. Leopold, Ormeau Avenue.
 1901. Greeves, Fergus M., Garranard, Sydenham.
 1918. Greeves, O.V., Tavanagh House, Portadown.
 1924. Gregg, Rev. W. J., B.A., 101 The Mount.
 1923. Gregory, M. J., 25 Gresham Street.
 1925. Gregory, Pdraic, M.R.I.A.I., 25 Gresham Street.
 1924. Griffith, Henry A. C., Belleville, Cliftonville Road.
 1924. Griffith, Miss Grace A., Belleville, Cliftonville Road.
 1924. Griffith, Miss K. E., Belleville, Cliftonville Road.
 1923. Grimshaw, Reginald W., 13 Rossmore Avenue.

 1883. Hamilton, Rt. Hon. and Rev. T., D.D., LL.D., Queen's University.
 1908. Hamilton, Miss, 5 Church Avenue, Holywood.
 1923. Hamilton, Fred. M., 19 Windsor Park.
 1923. Hamilton, T. S., Presbyterian Church House.

1925. Hanna, Mrs. S. M., 31 Kelvin Parade.
 1924. Hanna, Thomas, Greenbank, Cultra, Co. Down.
 1920. Harbinson, Wm. Highbury, North Road.
 1923. Harbison, Miss, Esplanade House, Whitehead.
 1924. Harbison, Miss Margaret, 1 Madison Avenue.
 1921. Hayward, H. Richard, Hopefield House, Antrim Road.
 1924. Head, Major Henry Nugent, The Downs, Newcastle, Co. Down.
 1921. Heenan, Miss J., 11a Stranmillis Road.
 1923. Henderson, J. A. D., 11 Norfolk Drive.
 1923. Henderson, Miss, 1 George's Terrace, Ballysillan.
 1923. Henderson, Robert G., 10 Arthur Street.
 1908. Henry, F. W., Ye Olde Castle, Castle Place.
 1915. Herdman, Miss E. W., Fountainville, University Road.
 1876. Heron, F. Adens, D.L., F.R.S.A.I., Maryfield, Holywood.
 1922. Heron, Mrs. Maryfield, Holywood.
 1922. Heron, Miss E. do.
 1922. Heron, Miss, Teagheen, Evelyn Gardens, Antrim Road.
 1921. Hewton, J., M.P.S.I., 315 Ormeau Road.
 1924. Hill, Miss Nellie, 36 University Avenue.
 1922. Hill, Dr. S. W., 46 Pound Street, Larne.
 1905. Hobson, Mrs. Aitennach, Crawfordsburn, Co. Down.
 1921. Hoffman, F., Leamington, 7 Old Cavehill Road.
 1895. Hogg, A. R., 10 Thorndale Avenue.
 1908. Hogg, D. J., 16 Kansas Avenue.
 1903. Holland, Miss, Highbury, Cadogan Park.
 1904. Holland, Frank J., Fairyhill, Osborne Gardens.
 1925. Holmes, Williams, Forth River P. E. School.
 1921. Holness, John J., 26 Ava Street.
 1923. Honeyburne, Miss Ella F., Fortwilliam, Antrim Road.
 1906. Hopkirk, F. G., Midland Railway Co. (N.C.C.).
 1925. Houston, Dr. J. C., 90 Antrim Road.
 1921. Hoskins, Miss M., 14 Rosetta Park.
 1921. Hoskins, A. P., F.I.C., F.C.S., 14 Rosetta Park.
 1914. Houston, James Dick, Northern Bank House, Kilrea, Co. Derry.
 1921. Houston, H. S., Slievemara, Jordanstown, Co. Antrim.
 1923. Hull, G. E., 36 Cliftonville Road.
 1922. Hunter, Dr. J. A., 6 Stranmillis Road.
 1923. Hunter, F. J., Gillhall, Dromore, Co. Down.
 1923. Hume, James H., 1 Robeby Villa, Shore Road.

 1921. Ireland, J. Herbert, 107 South Parade.
 1923. Irwin, Wilson, Rossnall, Helen's Bay.
 1923. Iten, Hans, 18 South Parade.
 1923. Iten, Mrs. 18 South Parade.

 1923. Jackson, M., Maze, Hillsborough.
 1892. Jaffé, Lady, 3 Upper Phillimore Gardens, Kensington, London, W.8.
 1923. Jamison, Oswald, 8 Mayfield, Bangor.
 1909. Jenkins, W. A., 6 Elnwood Terrace.
 1914. Jenkinson, Henry, 29 Rosemary Street.
 1901. Johnson, Rev. W. F., M.A., F.E.S., M.R.I.A., 4 Killowen Terrace, Rostrevor.
 1906. Johnston, F. W., The Cottage, Cultra.
 1924. Johnston, Henry, 40 Victoria Gardens.
 1923. Johnston, Miss Isa, 1 George's Terrace, Ballysillan,

1923. Johnston, Miss Jean, Beechville, Glenburn Park.
 1916. Johnston, Miss M. B., Beechville, Glenburn Park.
 1921. Johnston, E. C., F.R.S.A.I., Glenmount, Newtownards.
 1922. Johnston, Miss Minnie E., 25 Lonsdale Street.
 1922. Johnston, T. J., 15 Westland Gardens.
 1923. Johnstone, Miss Anna, Municipal College of Technology.
 1921. Jones, H. H., 4 Donegall Square N.
1924. Kearney, William, Dunraven, Donaghadee.
 1924. Keenan, Miss Mary, 98 Donegall Pass.
 1917. Keiller, W., 11 Chichester Street.
 1922. Keith, S. S., 20 Knutsford Drive, Cliftonville.
 1918. Kennedy, David, Pembroke, Wandsworth Road, Knock.
 1921. Kennedy, Captain E. R., A.R.I.B.A., M.R.San.I., The Bungalow, Sandown Road, Knock.
 1921. Kennedy, R. N., J.P., Avonmore Lodge, Balmoral.
 1923. Kennedy, Isaac, 294 Springfield Road.
 1922. Kerr, Charles E., B.A., Mount Carmel, Upper Newtownards Road.
 1923. Kerr, Miss J., Aurdh Gurth, Greenisland.
 1923. Kevin, Miss M., 144 Donegall Pass.
 1899. Killen, William, 3a Dudley Chambers, 20 Waring Street.
 1922. King, Mrs. J., Castle Chester, Whitehead.
 1922. Kinkead, Geo. W., Cushendun, Co. Antrim.
 1923. Kinnaird, Miss Elizabeth H., 1 Eglantine Place.
 1886. Kirkpatrick, F., 27 Oxford Street.
 1923. Kitchen, Gilbert Ingram, 64 Roseleigh Street.
 1922. Knox, C. J., 9 Donegall Square S.
 1923. Knox, Joseph R., 40 Cooke Street.
 1877. Kyle, R. A., 17 Wellington Park
1901. Larmour, H. G., J.P., Lisburn.
 1923. Larmour, Miss Gertrude, 1 Brooklyn Villas, Ballyholme, Bangor.
 1923. Lauder, William, Public Library.
 1920. Lavery, W. H., Glenwood, Bloomfield Road.
 1923. Lawlor, H. C., M.R.I.A., 8 Windsor Avenue.
 1923. Lawlor, Mrs. H. C., 8 Windsor Avenue.
 1912. Ledgerwood, N. J., J.P., 10 Wellington Park.
 1922. Leetch, Miss Elizabeth, Cullybackey, Co. Antrim.
 1920. Lepper, R. S., M.A., LL.M., F.R.Hist.S., F.R.S.A.I., Elsinore, Crawfordsburn.
 1923. Leyden, Miss Margaret M., Belgrave, Bloomfield.
 1923. Leyden, William A., Belgrave, Bloomfield.
 1925. Linaker, Miss Kathleen A., 206a Stranmillis Road.
 1899. Lindsay, Professor J. A., M.D., M.A., F.R.C.P., 3 Queen's Elms.
 1915. Lindsay, Mrs. c/o Ulster Bank, Markets Branch, Belfast.
 1922. Logan, James, M.A., F.R.G.S., Greystone, Ravenhill Park.
 1923. Logan, Miss Mary E., 47 Botanic Avenue.
 1921. Loughridge, James, 173 Cliftonville Road.
 1918. Lowry, Miss, Hazelwood, Bloomfield.
 1923. Lowry, James, Belfast Bank, Glenarm.
 1893. Lowry, D. E., Oakley, Strandtown.
 1908. Lowry, James, Llewellyn Avenue, Lisburn.
 1910. Lowry, Miss L., Hazelwood, Bloomfield.
 1924. Lynn, Miss M. J., M.Sc., Albany Cottage, Carrickfergus.

1922. MacCulloch, Miss Charlotte M., Ballyarton, Killaloo, Londonderry.
1924. MacLaughlin, Francis A., M.B., Thirlestane, Osborne Park.
1915. Maconachie, Rev. D. H., B.A., B.D., The Manse, Holywood.
1915. Maconachie, Mrs., The Manse, Holywood.
1905. Macoun, Mrs. S. M., Clanrolla, Windsor Park.
1912. Macoun, S. M., do.
1922. Magill, Hugh, 217 Cavehill Road.
1920. Magowan, A., 2 Easton Crescent.
1921. Magowan, Mrs., 2 Easton Crescent.
1924. Major, Miss Anna M., Ulai, Holywood.
1924. Major, Miss Olga, Ulai, Holywood.
1905. Malcolm, Miss Susan, Downshire Road, Holywood.
1921. Malcolm, Bownman, M.I.C.E., M.I.Mech.E., Inver, Ashley Park.
1901. Malcolmson, Herbert T., M.B.O.U., 32 Arthur Street.
1880. Marsh, Mrs. Glenlyon, Holywood.
1923. Martin, Miss Anna H., 17 College Gardens.
1924. Martin, Miss Helen, B.A., B.Sc., 40 Botanic Avenue.
1924. Martin, Miss Josephine C., 12 Glandore Avenue.
1923. Martin, Mrs. Kathleen R., 17 College Gardens.
1924. Martyn, Douglas, 30 Orient Gardens.
1922. Marshall, Rev. R. L., M.A., LL.D., Maghera, Co. Derry.
1922. Marshall, Miss M. E., 82 Ardenlee Avenue.
1916. Masterson, Miss, 93 Wellesley Avenue.
1915. Mawdsley, Miss, 28 Green Road, Knock.
1908. Maxwell, Henry, Dunalbine, Deramore Park.
1923. Maxwell, Joseph, J.P., Fierna, Osborne Park.
1923. Maxwell, Miss F. E., do.
1925. Maxwell, Miss Isabella, 10 Luxor Gardens.
1892. Maxton, Jas., M.I.N.A., 6 Kirkliston Drive, Bloomfield.
1919. Mayes, A. S., 23 Glandore Avenue.
1903. Mayne, H. Horner, 24 Elmwood Avenue.
1921. Meakin, Chas., 119 The Mount.
1917. Megaw, Rev. W. R., B.A., The Manse, Rosetta.
1920. Megaw, I. J., 26 Linenhall Street.
1924. Megaw, W. J., B.Sc., 16 Upper Crescent.
1923. Mercer, S., "Hanging Leaves," Jordanstown.
1923. Mercer, Mrs. S., do.
1921. Mercier, S. T., J.P., 89 Cliftonville Road.
1918. Metcalfe, A. W., Hawthornden Road, Knock.
1922. Meyer, Sir Robert, St. Clair, Windsor Avenue.
1906. Millar, Thomas O., 306 Antrim Road.
1907. Milligan, Miss Bessie, 22 Ravenhill Gardens.
1921. Milligan, Dr. C. J., Dispensary House, Ligoniel.
1923. Mills, Frederick A. C., 3 Woodland Avenue.
1922. Moffatt, James A., 2 Chelmsford Place, Larne Harbour.
1922. Moneypenny, Sir Frederick, C.V.O., C.B.E., City Hall.
1923. Moore, Kenneth M., The Finaghy.
1923. Moore, William, Public Library.
1898. Montgomery, H. C., F.R.S.A.I., 40 Rosemary Street.
1913. Monegomery, Miss E. S., 26 College Green.
1920. Montgomery, Miss S., 120 Eglantine Avenue.
1920. Montgomery, Miss G., 120 Eglantine Avenue.
1911. Montgomery, Miss Jane E., 8 Sandhurst Road.
1916. Moore, Frank, J.P., Ph.D., F.E.I.S., Home-Lyn, Marlborough Park North.
1922. Moore, Lord Justice, D.L., Moore Lodge, Kilrea.

1917. Morrison, Rev. Robert N., B.A., Magherahamlet Rectory, Ballynahinch.
1921. Morrison, Miss I., Southleigh, Knockbreda Park.
1923. Morrison, William, 3 Windsor Avenue, Bangor.
1923. Morton, Mrs., 252 Antrim Road.
1923. Morton, Miss, 252 Antrim Road.
1922. Murray, B., 628 Ravenhill Road.
1923. Muskett, A. E., A.R.C.Sc. (Lond.), 12 Belgravia Avenue.
1923. M'Aleese, Miss Margaret T., Florence Villas, Lake Glen, Falls Road.
1923. M'Allister, Wm. James, 134 Rugby Avenue.
1915. MacCarthy, Mrs., Freshford, Knock.
1905. MacCleary, A., Kensington Hotel, College Square East.
1901. MacRae, Kenneth, Ulster Agricultural Society, Balmoral.
1899. M'Bretney, W. A. J., 31 Haypark Avenue.
1925. M'Bratney, Miss Margaret, Endsleigh Gardens, Bloomfield.
1921. M'Bride, J., 1 Adelaide Street.
1923. M'Bride, Miss W., 118 Albertbridge Road.
1923. M'Burney, James, 48 Durham Street.
1909. M'Cance, James, 302 Antrim Road.
1913. M'Cance, Captain Stoupe, 4 Markham Square, London, S.W.3.
1921. M'Callum, Major J. D. M., C.B.E., D.S.O., B.A., 6 Windsor Avenue.
1922. M'Carthy, Miss, 46 Stranmillis Road.
1921. M'Carthy, W. J., Ashley, Alexandra Park, Holywood.
1919. M'Caw, James, Glenfield, Donegall Park.
1884. M'Cleery, H., J.P., Oakhill, Dunmurry.
1912. M'Clelland, E. W., B.Sc., 79 Kansas Avenue.
1921. M'Cloy, Miss A. E., Cuil-na-Mban, Norfolk Drive, Glen Road.
1923. M'Cloy, Thompson, 13 Queensland Street.
1922. M'Clure, Miss Lily, Ashbank, Ardenlee Avenue.
1923. M'Clure, Miss Daisy, Ashbank, Ardenlee Avenue.
1923. M'Clure, Miss Irene, Ashbank, Ardenlee Avenue.
1923. M'Comb, Mrs., 54 Cherryvalley Gardens, Knock.
1921. M'Comish, John, Benmore, Strandtown.
1924. M'Connell, Rev. S. G., B.A., Dromara, Co. Down.
1923. M'Cracken, John A., Downpatrick Street, Rathfriland.
1923. M'Creary, W. A., 90 North Parade.
1921. M'Cullough, Miss J. J., 8 Cardigan Drive.
1921. M'Cullough, Miss S., 8 Cardigan Drive.
1923. M'Cullough, Miss Meta, 8 Cardigan Drive.
1923. M'Cutcheon, Mrs., Rineen, Annadale.
1923. M'Cutcheon, Miss J. T., B.A., Rineen, Annadale.
1917. M'Devitt, H., 115 High Street, Holywood.
1913. M'Dowell, Miss E., 93 Malone Avenue.
1924. M'Donnell, Miss Kathleen P., 110 Cullingtree Road.
1923. M'Giffin, Miss, Riverside, Holywood.
1921. M'Gladery, R., The Brickworks, Springfield Road.
1917. M'Ilroy, R. J., 32 Pandora Street.
1923. M'Intyre, Jack, Y.M.C.A., Wellington Place.
1921. M'Ilwaine, J. E., M.D., 26 College Gardens.
1914. M'Kay, Miss E. W., B.Sc., Ardbana Terrace, Coleraine.
1920. M'Kee, Miss Eva K., Ashleigh, Charnwood Avenue.
1920. M'Kee, Miss F. V., Ashleigh, Charnwood Avenue.
1921. M'Kee, Joseph, 60 Clonlee Drive, Strandtown.
1923. M'Kenzie, Alexander, 60 North Parade.

1923. M'Keown, Miss Eleanor, 180 Woodvale Road.
 1923. M'Keown, John, Holestone, Doagh.
 1923. M'Kibbin, Fredk., F.A.I., 13 Donegall Square West.
 1906. M'Kinney, Miss M. A. C., Sentry Hill, Carnmoney.
 1922. M'Kisack, Miss M. K., 9 Mount Pleasant.
 1922. M'Knight, Wm. J., 220 Springfield Road.
 1921. M'Laine, Lachlan, Rathaline, Annadale Avenue.
 1923. M'Laughlin, Miss Bessie, 61 South Parade.
 1922. M'Master, Dr. H., Ashbourne, Strandtown.
 1922. M'Master, Miss, B.A., do.
 1912. M'Meekin, Miss A. M., Sunnyside, Carnmoney, Co. Antrim.
 1917. M'Meekin, A., J.P., Cogry House, Doagh.
 1920. M'Neill, Mrs., Lockabeg, Knockdene Park.
 1924. M'Quitty, Rev. John, B.A., Westbourne Manse, Bloomfield.
 1924. M'Vea, Miss Florence V., The Crag, Whitehead.
1921. Neill, F. F., 35 Candahar Street.
 1921. Niblock, J. B., 208 Cliftonville Road.
 1921. Niblock, Mrs., 208 Cliftonville Road.
 1923. Nicholl, Miss R., 185 Cregagh Road.
 1923. Nodder, Charles R., M.A., The Corner House, Lambeg.
 1923. Nodder, Mrs. Winifred, The Corner House, Lambeg.
 1922. Nugent, E. H. S., D.L., Portaferry House, Portaferry.
1923. O'Connor, Hugh, 78 Upper Newtownards Road.
 1923. O'Kane, Dr. M. J., J.P., Cushendall.
 1898. Orr, James, 17 Garfield Street.
 1923. Orr, R. J., Edale, Crawfordsburn.
 1924. Orr, William G., 10 & 12 North Street.
 1921. Osborne, T. Edens, F.R.S.A.I., 4 College Square North.
 1923. Owens, Miss Minnie Y., 29 Indiana Avenue.
1923. Park, George, 43 Arthur Street.
 1921. Paton, John, Ardmore, Bangor.
 1922. Patterson, Crossley D., Homeview Cottage, Rathgail, Bangor.
 1921. Patterson, W. H. F., Auburn, Donaghadee.
 1923. Patterson, Miss M. Grace, 54 North Parade.
 1924. Patterson, William H., 54 North Parade.
 1921. Parkes, W. J., 2 Claremont Street.
 1921. Parkes, Mrs., do.
 1921. Parkes, Miss Lilian, do.
 1921. Parsons, Thomas, Farm Hill, Marino.
 1922. Patton, Wm., 78 Edinburgh Street.
 1669. Pim, Joshua, Rathbawn, 12 Adelaide Park.
 1923. Pollock, James A., Notting Hill.
 1923. Polley, W. T., 131 University Street.
 1903. Pooler, Rev. Chas. K., D.D., M.R.I.A., D.Litt., Carnbin, Whitehouse.
 1922. Porte, G. W. C., 37a May Street.
 1890. Porter, F. A., 13 Queen's Square.
 1921. Porter, Miss May, Beechview, Balmoral Avenue.
 1921. Porter, Miss Edith, do.
 1925. Porter, S. C., B.L., 112 Eglantine Avenue.
 1925. Porter, Mrs. S. C., 112 Eglantine Avenue.
 1883. Praegar, R. Ll., D.Sc., B.A., B.E., M.R.I.A., Nat. Library, Kildare Street, Dublin.
 1925. Price, Miss Esther H., 4 Ormiston Parade.

1922. Pringle, Alex., 1 Clarence Street W.
 1924. Purce, James, 33 Ravenhill Park.
 1924. Purce, James, junior, 33 Ravenhill Park.
 1924. Purce, Thomas, 33 Ravenhill Park.
 1921. Pyper, James, B.A., 30 Cranmore Avenue.

 1923. Quinn, W. J., The Cattogs, Comber.

 1923. Radcliffe, Miss 7 College Square E.
 1923. Rankin, Miss, Frankfort Street N. School.
 1907. Rea, Miss M. W., M.Sc., Salem House, Sydenham.
 1916. Rea, Miss L. C., Salem House, Sydenham.
 1923. Reid, James C., Overton, Balmoral.
 1924. Reid, C. J., B.A., B.A.I., Engineers' Office, B. & C. D. Railway.
 1923. Reid, E. M., Hazelwood, Antrim Road.
 1923. Reilly, George E., C.E., Woodburn Glen, Carrickfergus.
 1919. Reilly, Geo. C., M.I.Mech.E., Woodburn Glen, Carrickfergus.
 1921. Reynolds, Miss Doris L., Queen's University.
 1925. Rhynehart, John G., F.R.C.Sc.I., D.I.C. (Lond.), Ministry of Agriculture, Wellington Place.
 1922. Ritchie, John, Cullintra, Comber.
 1923. Ritchie, Miss, 44 Trevelyan Terrace, Duncairn Gardens.
 1923. Ritchie, Miss Helen, 44 Trevelyan Terrace, Duncairn Gardens.
 1922. Robb, Norman, 65 Ulsterville Avenue.
 1922. Robb, Mrs. Norman, 65 Ulsterville Avenue.
 1923. Robb, S. A., Simpson Memorial N. School, Bloomfield.
 1921. Roberts, J. R., 43 Fitzwilliam Street.
 1921. Robinson, W. R., 58 Ravenhill Park.
 1921. Robinson, Miss L., 16 Kingsmere Avenue.
 1924. Robinson, Miss A., Johnston Memorial Home, Hopefield Avenue.
 1923. Robinson, Miss Maud, Elland, Jordanstown.
 1923. Robinson, Miss May, Elland, Jordanstown.
 1923. Robinson, Miss J., 16 Camberwell Terrace, Antrim Road.
 1921. Robson, Mrs. 81 Wellington Park.
 1923. Robson, Miss, 81 Wellington Park.
 1924. Rundle, Harris, Sefton, Knockdene Park.
 1921. Rossington, Rev. H. J., M.A., B.D., Ardeevin, Cadogan Park.
 1922. Ruddell, Miss B., 2 Craigmore, Whitehead.
 1921. Rumley, J. D., Winston, Marlborough Park North.
 1909. Russell, Nelson, Strathmore, Lisburn.
 1923. Russell, Alfred, 64 Ravenhill Park.

 1925. Saunders, T. Edgar, 4 Eastern Crescent.
 1913. Savage, W. E. J., 8 Lincoln Avenue.
 1917. Sayers, Miss W. J., B.A., Bartragh, Knock.
 1920. Sayers, Miss J. B., Bartragh, Knock.
 1924. Sayers, Miss M., 61 Clonlee Drive.
 1922. Scott, Herbert C., Rashee Road, Ballyclare.
 1923. Scott, Henry, Presbyterian Church House, Belfast.
 1924. Scott, Miss, Ministry of Agriculture, Wellington Place.
 1924. Seaton, Ian William, Plant Breeding Division, Ministry of Agriculture.
 1918. Seymour, J., M.A., Inchmarlo, Marlborough Park.
 1921. Shanks, Edward, 13 Donegall Square W.
 1924. Shanks, Hubert, 15 Malone Road.

1923. Shanks, Mrs. E., Fernagh, Saintfield Road.
 1921. Shaw, Miss Louie Hinton, 72 Cromwell Road.
 1911. Shaw, G. W., Ulster Bank, York Street.
 1923. Shaw, William, Mountstewart, Ballymena.
 1922. Shearan, Samuel, F.R.C.A., Loughview House, Holywood.
 1923. Shearman, Miss S. Rosalind, Ashleigh House, Windsor Avenue.
 1922. Shewell, Major, 1 Liscard Terrace, Ormeau Road.
 1922. Shewell, Mrs., do.
 1905. Shiels, Rev. J. F., P.P., Saintfield.
 1921. Shiels, Edward, Summer Hill, Bangor.
 1921. Shortt, James, Wilmont, Lisburn.
 1924. Simpson, Miss E. C., 29 Thorndale Avenue, Larne.
 1921. Sinclair, Robert, 48 Waring Street.
 1890. Skillen, Joseph, 25 Stranmills Gardens.
 1920. Small, Professor J., D.Sc., Queen's University.
 1922. Small, James M., Ballymenoch Park, Marino.
 1922. Smiley, Miss, 19 Salisbury Avenue.
 1922. Smith, W. E. F., 45 Dunluce Avenue.
 1924. Smith, John, Donard, Cregagh, Belfast.
 1922. Smyth, Miss A., 8 Chichester Park.
 1923. Smyth, Miss G., 4 Adelaide Park.
 1923. Snoddy, Robert J., Toreagh, Raloo, Larne.
 1924. Speers, John, Belfast Bank, Ballyclare.
 1921. Stanley, Major Rupert, LL.D., M.I.E.E., F.I.R.E., Municipal
 College of Technology, Belfast.
 1921. Steed, George G., 13 Donegall Square West.
 1922. Steed, Mrs., do.
 1893. Steele, Miss, Dooneen, Marlborough Park.
 1921. Steen, Rev. David, B.A., The Manse, Islandmagee.
 1910. Stelfox, Mrs. A. W., B.Sc., A.R.C.Sc.I., 14 Clareville Road,
 Rathgar, Dublin.
 1911. Stendall, J. A. S., M.B.O.U., The Museum, College Square N.
 1923. Stendall, Mrs. J. A. S., Deva, Haypark Avenue.
 1904. Stephens, Captain J. Kyle, J.P., 13 Donegall Square North.
 1922. Stephens, Samuel, 13 Donegall Sq. N.
 1925. Steven, George, 2 Kinnaird Terrace, Antrim Road.
 1925. Stevenson, John H., 3 Bain's Place, Amelia Street.
 1894. Stewart, W. J., 11 Elgin Street.
 1923. Stewart, Albert K., 10 North Parade.
 1919. Strain, W., Windsor Park.
 1923. Stuart, C., 7 Eblana Street.
 1923. Stuart, Miss Louie, 7 Eblana Street.
 1924. Stronge, Robert, 86 Cliftonville Road.
 1924. Swan, H. S., Buncrana Mills, Co. Donegal.
 1922. Sweeney, Wm., 183 Cliftonville Road.

 1921. Tate, Jas., M.P.S.I., 7 and 9 Royal Avenue.
 1923. Tate, Robert E., 17 Clifton Drive.
 1922. Taylor, Frank, St. John's Marino.
 1920. Tedley, Miss, Rosetta School.
 1921. Thomas, J. Leigh, J.P., Downshire Road, Bangor.
 1921. Thomas, Mrs. J. Leigh, Downshire Road, Bangor.
 1921. Thompson, Joseph, Altorf, Holywood Road.
 1921. Thompson, Wm., Lauriston, Derryvolgie Avenue.
 1922. Thompson, Dr. Ross, Queen Street, Ballymoney.
 1921. Thomson, Richard, Cable Road, Whitehead.

1922. Thomson, James, 20 Station Street.
 1921. Todd, R. G., 1 Mount Easton, Cliftonville.
 1922. Torney, Henry C. S., F.R.S.A.I., The Moat, Holywood.
 1875. Traill, W. A., M.A., F.R.S.A.I., Red House, Bushmills, Co. Antrim.
 1921. Trimble, Andrew, M.B., D.P.H., J.P., Tyr-owen, Downview Avenue.
 1924. Turkington, Miss S. J., 41 University Road.
 1921. Turner, S., jun., 142 Cliftonpark Avenue.
 1925. Turner, Edmund, A.R.C.Sc.I., 1 Dunowen Gardens.
 1922. Turner, Sir W. G., J.P., Hampton Park (Lord Mayor).
 1904. Turtle, W. Haydock, Lumeah, Malone Road.
 1909. Turtle, Mrs. N. S., Rosemount, Knock.
 1922. Verner, Miss, Tyrone, Cranmore Park.
 1893. Walker, W. J. D., C.B., The Sycamores, Drogheda.
 1920. Walker, Mrs., Wellington Park.
 1920. Ward, Miss Alice, Albert Villa, Sydenham.
 1921. Ward, Francis E., Ridgeway Street, Stranmillis Road.
 1923. Ward, A. H., 5 Tennyson Avenue, Bangor.
 1919. Warnock, Miss, 24 Cromwell Road.
 1909. Watson, John G., The Maples, King's Road, Knock.
 1921. Watson, Frank W., 10 Cranmore Gardens.
 1913. Watson, Mrs. F. W., B.Sc., 10 Cranmore Gardens.
 1923. Watson, Miss S., Firbeck Cottage, Sydenham.
 1924. Watson, W. J., 5 Mountcashel Street.
 1921. Watt, Miss Anna, 622 Ravenhill Road.
 1924. Watters, Miss Ella, Holywood.
 1925. Webb, Miss E. M., Rath House, Shandon Park.
 1924. Wegg, George R., Glynn Villas, Larne.
 1920. Weston, Wilfred W., 14 Donegall Square West.
 1924. Weyms, David, 19 Cranmore Gardens.
 1923. Wheeler, Norman F., 1 Fitzwilliam Street.
 1923. Whitaker, W. M., K.C., 4 Castleton Terrace, Antrim Road.
 1923. Whitaker, Mrs. W. M., 4 Castleton Terrace, Antrim Road.
 1921. White, Chas. E., 219 Cavehill Road.
 1921. White, George, Chatsworth, Balmoral.
 1923. White, Miss Sara, Carlton, Carolan Road.
 1922. White, Mrs. P. W. do.
 1922. White, Miss Patricia, do.
 1923. Wight, Robert J., 9 Stranmillis Street.
 1877. Whitla, Sir William, M.D., J.P., M.P., Lennoxvale House.
 1917. Williamson, James, J.P., Sandown Park, Knock.
 1923. Willis, Miss A., 3 Avonmore, Balmoral.
 1893. Wilson, George, 17 Bedford Street.
 1901. Wilson, Prof. Gregg, O.B.E., M.A., D.Sc., M.R.I.A., Ardenza, King's Road.
 1904. Wilson, Mrs., Ardenza, King's Road.
 1925. Wilson, Miss Anna, 28 College Park Avenue.
 1924. Wilson, Miss Edith, 28 College Park Avenue.
 1924. Wilson, W. E., 31 North Street.
 1923. Woodburn, Rev. J. B., D.D., 78 Eglantine Avenue.
 1923. Woodburn, Mrs., 78 Eglantine Avenue.
 1922. Woods, C. P., Princetown Lodge, Bangor.
 1901. Workman, W. H., F.Z.S., M.B.O.U., Lismore, Windsor Ave.
 1923. Worth, Miss E. A., 23 Cyprus Avenue.

1922. Younge, W. G., Town Hall, Larne.
 1923. Youell, Henry, 132 My Lady's Road.
 1924. Young, Robert A., B.A., 80 Rugby Avenue.

Junior Members.

1925. Arneill, Miss Madge, 127 Melrose Street.
1924. Blair, Jack Coulter, 33 Ophir Gardens.
 1923. Blake, P. H., 4 Knock Road, Knock.
 1922. Blake, F. R. D., 4 Knock Road, Knock.
 1923. Bryans, Harold, The Museum, College Square N.
 1921. Bulla, A. C., Rydal, Lisburn Road.
1925. Colhoun, James H., Green Cottage, Ballycarry.
 1923. Coulter, Miss Kathleen, Rosetta School.
 1920. Crawford, R. H., Orissa, Marlborough Park South.
 1923. Crawford, Miss Agatha, Easthope, Bawnmore Road.
 1922. Crawford, J. C. C., do.
1924. Gallagher, Edward, 72 Martinez Avenue
 1923. Gibson, Miss S., Ardamine, Ravenhill Road.
 1924. Glendinning, Miss Ethne D. E. E., 1 Lenoxvale.
1924. Hamilton, Miss Grace, 11 Rosetta Avenue.
 1923. Higginson, John Sidney, Dunvarna, Adelaide Park.
 1923. Higginson, Miss Margaret, do.
1923. Keay, Miss Nancy, 13 Wellington Park Terrace.
 1923. Kinnaird, Miss Helen, 1 Eglantine Place.
 1924. Kerr, Miss Mary, Mount Carmel, Bloomfield.
 1924. Kerr, Michael do.
 1924. Kerr, Miss Thérèse, do.
1922. Loewenthal, Miss A. C., Lenoxvale.
 1924. Loewenthal, Miss Joan, Lenoxvale.
1924. Macoun, Miss C. P., Maralin, Osborne Gardens.
 1924. Megaw, Miss Alice K., Breagh, University Road.
 1924. Megaw, Miss Helen D. do.
 1922. Megaw, T. Mc., do.
 1921. Mulligan, Miss J., 74 Cromwell Road.
 1923. M'Devitt, Harry, 32 Stranmillis Gardens.
 1923. M'Gibney, Miss Rita, Baroda, Woodvale Road.
 1923. M'Keague, Cyril, 32 Farnham Street.
 1924. M'Keague, Harold, 31 Agincourt Avenue.
 1923. M'Kelvie, Miss Mollie, Rosetta School.
1924. Neill, Miss Norah, Linfield Villa, Windsor Avenue.
 1923. Nixon, Miss Josephine, Rosetta School.

1924. Patterson, Miss Jean, 54 North Parade.
1923. Patterson, William R., 124 Eglantine Avenue.
1923. Pomeroy, Arthur J. C., Catterham, Haslow Oval, Harrogate.
1923. Pomeroy, J. F. Brian, do.

1923. Rankin, James, 27 Toronto Street.
1924. Reilly, Grier, 16 Salisbury Gardens.
1923. Robinson, Miss Inez M. C., Terrace Hill, Shaw's Bridge
Co. Down.
1923. Russell, Alfred, 64 Ravenhill Park.

1923. Stendall, Miss N., Deva, Haypark Avenue.
1924. Stevenson, James Cochrane, 2 George's Terrace, Ballysillan.
1924. Stronge, Rollo, 86 Cliftonville Road.
1923. Symmers, Miss P., 23 Windsor Avenue.

1923. Taylor, Norman, 7 Delaware Street.
1923. Thompson, Jack, 29 Glendower Street.
1924. Todd, Miss Margaret M., 1 Mount Easton.

1921. Walshe, J., 50 South Parade.
1923. Ward, Miss S. P., 15 Stranmillis Road.
1924. Warnock, Peter, 47 Balmoral Avenue.
1924. Watson, Harry, Rosemount, Knock.
1923. Williamson, Miss D. V., Sandown Park, Knock.
1923. Wilson, John, 1 St. Andrew's Square East.
1923. Wilson, Thomas Desmond Lytton, 24 Candahar Street.

BRITISH
MUSEUM

22 AUG 28

NATURAL
HISTORY.

Reduced Prices of Proceedings.

In accordance with resolution passed at General Meeting held on 28th April, 1911, the following reductions have been made in the prices of Proceedings, &c., to Members of the Club. When the stock has been sufficiently reduced prices will be raised again.

Proceedings, without Appendices, Series II., Vol. I. (1873-74 to 1879-80) to 2/6 per vol.			
"	"	"	" II. (1881-82 to 1886-87) to 2/6 "
"	"	"	" III. (1887-88 to 1892-93) to 2/6 "
"	"	"	" IV. (1893-94 to 1900-01) to 2/6 "
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The prices quoted above are for complete volumes, but any separate part may be had for 6d.

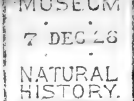
Appendices, Vol. I.	...	In Leather Binding	...	5/- per vol.
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Separate Appendices, which in covers are priced 6d and 1s, may be had in loose sheets at 1d and 2d per copy respectively. (This does not apply to Nos. 4 and 7 and 8 of Vol. II., of which we have no surplus.)

Flora of North-East Ireland, by Stewart and Corry, with Supplement. 2/6 per vol.

THE FOLLOWING PUBLICATIONS OF THE CLUB CAN BE HAD FROM THE LIBRARIAN

Eighth Annual Report—1870-71, containing Appendix II., List of Irish Liassic Foraminifera—Wright; and List of the Fossils of the Estuarine Clays of Antrim and Down—Stewart				2/6
Ninth Annual Report—1871-72				1/-
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Series II., Vol. II., Part I., 1880-81, containing Appendix VI., List of Foraminifera of South Donegal—Wright; Sponge Remains from Carb. Limestone, County Sligo—Wright; and Fossil Sponge-spicules, County Sligo—Carter, 1 Plate				1/6
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BELFAST
Naturalists' Field Club

SIXTY-FOURTH YEAR.
1926-1927.

PRESIDENT:
WILLIAM M. CRAWFORD, B.A., F.E.S., F.Z.S.

THE SEVENTH FIELD EXCURSION

WILL TAKE PLACE

ON SATURDAY, 21st AUGUST, 1926.

TO

Mountstewart Italian Garden, The ~~A~~varies, Bally-
walter Park, and Portavogie Fishery Harbour. *if*

Conductors—Messrs. R. J. Welch, M.Sc., M.R.I.A., and
George Steven (Chief Inspector of Fisheries).

Members will meet the conductors at the Old Museum, College Square N., at 9-45 sharp, and take the seats allotted in the motor charabancs. The route to Mountstewart will be via Newtownards, passing on the way the fine tumulus and glacial gravels at Dundonald, Scrabo Hill with its volcanic sills and ripple-marked sandstones. In Newtownards the Old Cross and Priory will be seen, and soon after The Butterlump, a fine glacial erratic of Basalt, weighing about 130 tons, resting on bright red Triassic sandstones. The contrast here between the dark erratic and underlying red rocks is very marked; it may have come from Co. Antrim in the great ice-sheet which travelled south over N.E. Ireland. The first stop will be at **Mountstewart** to visit the new Italian Gardens, for which the Marchioness of Londonderry has given special permission. With their great Pergola, several Lily ponds, terraces, Dodo and Monkey pillars, rat-proof bird houses, Lady Mary's Tea House, and the many models of extinct animals on the terrace walls or steps, &c., there is nothing in Irish gardens to approach this garden for beauty and interest.

In addition to the great Ilex on the lawn, the large Florencecourt Yews, and two largest clipped Bay trees in the British Isles, the Head Gardener, Mr. T. W. Bolas will point out many rare or interesting plants in the Pergola and Sunk garden, &c. These include Eucalyptus trees—*E. globulus*—the Blue Gum of Australia, growing at Mount-stewart to a height of 85 feet; a New Zealand Free fern—*Dicksonia antarctica*—and the rare Californian shrub *Dendromecon rigidum*, with its big yellow flowers, which may still be in blossom. The Pergola is planted with twenty species or varieties of Australian and New Zealand Acacias, the Club Palm, *Cordyline australis*; the Chusan Palm, *Chamaerops humilis*; Ginger Plant, *Hedychium Greenii*; Japanese Banana, *Musa japonica*; Jerusalem Sage, *Phlomis fruticosa*; Chilian Nut, *Guerina avellana*; Cork tree, *Quercus subes*; Bottle brush Tree, *Metrosideros*; Loquat, *Eriobotrya*; *Viburnum rhytidophyllum* from China; *Eucryphia cordifolia* and *Crinodendron Hookeri* from Chili with *Desfontainea spinosa* and some fine lilies, *Lilium auratum*, *L. Henryi*, *L. Pardalinum*, &c., which will likely be in bloom about that time. Round the lake are many fine plants, *Gunneras*, Japanese Primulas, Irises, &c., but time will not permit of a visit on this occasion.

C/h
e/h
The next stop will be in **Ballywalter Park** to visit Lady Dunleath's Bird ~~A~~eries, Rock Garden, and Bird Pond, where many interesting birds will be seen in large open-air ~~a~~eries, or in the wired in area round the bird pond. Among the birds in No. 1 Aviary may be seen Australian Flock Doves and Blue eye Doves (both have bred this season), Palm Doves, Snow Bunting, Red Head and Zebra Finches, Cutthroats, Bulfinch, Goldfinch. In No. 2, Australian and other Finches, Spire birds, Blackheaded and Whiteheaded News, Cordon Bleu, Masked Doves, Red-poles, Pekin Robins, Ribbon Finches, &c. Outside there are Trumpeters, Australian Piping crows, Karracorrays, Tine-mon, Californian Quail, Brazil Jays, many species of Duck in pond, Black Swans and a White Rhea. In the Rockery will be seen New Zealand ferns, wild small White Foxglove from the Alps, *Soldanellas*, *Vincetoxium officinalis* and many other plants from the Alps and Pyrenees. The Goat Farm will also be visited.

At **Portavogie**, Mr. Steven will show the party much of interest at the fishing harbour; here the artists, amateur photographers and anglers of the party will find much to interest them (some films, &c., should have been reserved for the fishing boats). At the week-end many of the boats are in harbour. On the sandhills some interesting land-

shells, beetles, spiders, and plants occur, and shore collecting can be indulged in, both in rock pool and on strand. *Tide permitting boats to leave harbour, dredging will be carried out in Channel.*

Fare (including motors, tea and gratuities), members **6s** each, visitors **7s** each.

**THE PARTY IS LIMITED TO ~~66~~ PERSONS BY
CHARABANC. 100**

Other members using their own cars will please notify the conductors, otherwise tea cannot be provided. ⊕

Applications for places must be made to Mr. R. J. Welch, 49 Lonsdale Street, Belfast, **accompanied by remittances**, on or before noon on Tuesday, 17th August. Strict regard will be paid to priority of application and payment of fare. Club tickets will be issued to those who can be taken, and the fares of other applicants will be returned. G

A. H. DAVISON, }
R. J. WELCH, } Hon. Secs.

10th August, 1926.

⁸⁵
⊕ *80 Came in 18 Cars. including
5 members from Coleraine, N.E. Derry, of
The Route Nat. F. Club.*



PROCEEDINGS ... AND ... ANNUAL REPORTS

SERIES II.
VOL. VIII.



PARTS
VIII. IX. X.
1925-26.
1926-27.
1927-28.

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A. M. I. CLELAND.

1918-19 & 1919-20.



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1920-21 & 1921-22.

1922-23.



J. A. SIDNEY STENDALL.
1923-24 & 1924-25.



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1925-26.



W. M. CRAWFORD.

1926-27.

PRESIDENTS -

1918 - 1928.



R. S. LEPPER. 1927-28.

PROCEEDINGS
and ANNUAL REPORT
OF THE
BELFAST NATURALISTS'
FIELD CLUB

For the Year Ending 31st March, 1926
(SIXTY-THIRD YEAR)

SERIES II.
VOLUME VIII.



PART VIII.
1925-26.



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ERRATA:—For Part VI, 1924-25 on page 327 please read
Part VII, 1924-25,

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SIXTY-THIRD YEAR, 1925-26.

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PROCEEDINGS.

SUMMER SESSION.

BENEVENAGH AND MAGILLIGAN.

Date—30th May, 1925. Conductor—A. W. Stelfox, M.R.I.A.
Number present, 51.

A party of 44 left the L.M.S. Station at 9-30 a.m. and were joined at Coleraine by seven members of the Route Club. A small party, in charge of Mr. Robert Bell, detrained at Downhill for the sand-dunes and shore between there and Magilligan. The majority went on to Bellarena, from which the ascent of Benevenagh can be most easily made. After traversing pretty lanes, edged by fern banks, and past the church of Tamlaght, with its adjoining "holy well" on the roadside, the party entered the lower woods, where wild hyacinths, violets, blue bugle, and ground ivy grew in great profusion. At the top of the woods a halt was called, and the conductor gave an interesting talk on the physical features of the district, commenting on the magnificent basaltic escarpment, with its "floes" so well defined, which towered above. Benevenagh, he remarked, is known to botanists as the finest station for Alpine plants in Ireland. Whether these plants are remnants of an ancient flora that was almost destroyed by the ice of glacial times, or whether they represent a new flora struggling to gain a footing, is a point yet to be decided by scientists.

The high wind made both observation and collecting difficult, the latter even dangerous. The ornithologists were delighted to observe a pair of Peregrine Falcons soaring high above the cliff, on which they no doubt had a nest. The botanists soon discovered the Mossy Saxifrage (*Saxifraga hypnoides*) growing in patches on the crumbling basalt, followed by the rare Cushion Pink (*Silene acaulis*) which was in full flower. Only one member succeeded in finding the Mountain Avens (*Dryas octopetala*). The Dwarf Juniper (*Juniperus nana*) was found growing flat against the rocks, and up a deep gully the rare Mountain Saxifrage

(*Saxifraga oppositifolia*) appeared very sparingly. Other interesting plants seen were the Hemlock Stork's-bill (*Erodium cicutarium*) and the Hawkweed (*Hieracium anglicum*).

The return journey was made by the train leaving Bellarena at 6-3 p.m.

THE SALLAGH BRAES.

Date—13th June, 1925. Conductor—Robert Bell.

Number present—42.

The journey was made by motor coach leaving College Square North at 9-45 a.m., and proceeding via Ballynure, Larne, Ballygally, and Cairncastle to the foot of Knockdhu, where, on the farm of Mr. Thomas Stewart, there is a souterrain of special interest. It has seven chambers, connected with each other by the usual defences, including a secret trap-door, and the tiny communicating doorways through which the would-be visitor was compelled to creep, "walking" on his elbows. It has also a remarkable ventilating flue, a feature of most souterrains, but in this instance of considerable size.

From Knockdhu the noble cliff escarpment, known as the Sallagh Braes, stretches in a magnificent semi-circle for about two miles, and attains a uniform elevation of from 800 to 900 feet. Rough talus slopes extend from the base of the cliffs to the farm lands and boggy pastures in the lower ground to the east.

The botanical interest of the locality lies in the vegetation of the cliffs and of the gullies carved out of the face of the rocks by stream action. Most of the rarer plants of the Antrim basaltic area are found here. Lady Ferns occur in great masses, from very old roots, all along the slope under the cliffs. The district is specially rich in rare mosses, and the bryologists of the party (Mr. Megaw and Captain Chase) reported several interesting "finds."

The geologists had a busy time. The Cretaceous rocks outcrop at various places from beneath the overlying Tertiary basalt. Above Killyglen, at the south end of the Braes, the Chalk is a prominent feature. Some rare accessory minerals are found in the Basalt, including farolite, natrolite, chabasite, analcite, apophyllite, and levyne.

The motors were rejoined at Killyglen School, and after tea in Larne, the return journey was made by the coast road, and Belfast reached before 9 o'clock.

BELVOIR PARK.

Date—27th June, 1925. Conductors—J. A. S. Stendall and Albert K. Stewart. Number present, 112.

This was an evening meeting. Entering the demesne by the first gate on the city side, the party proceeded by the south of the lake, on which numerous water fowl make their home, and thence by a "short-cut" to "Rabbit Park" and "Badger Wood," where dwell the common badger and the squirrel. Crossing a clearing, the site of the ancient church of Breda, surrounded by a graveyard, was reached. Beside the Dungannon vault Mr. A. Albert Campbell gave a short resume of the history of the Hill Trevor family, and mentioned that the first Lord Dungannon's daughter, Anne, after whom Annadale was named, married Lord Mornington, and was the mother of the great Duke of Wellington. Part of the future Duke's boyhood was spent at Annadale Hall, where his mother resided in the early years of her widowhood.

Proceeding, the party traversed the old Rock Garden, still showing traces of a former wealth of flowering shrubs and alpine, and, passing the mansion house, arrived at the large earthen burial mound. Mr. Campbell explained that these sepulchral tumuli, generally the graves of great chiefs, were held in veneration, and were the recognised places for religious and deliberative assemblies in primitive times. Consequently, they would become centres of population and for the convenience of the population the early Christian missionaries erected churches close by. This accounted for the frequently close proximity of ancient churches and sepulchral mounds, e.g., at Knock, Drumbeg, Dundonald, and Holywood. When Belvoir demesne was formed in 1740 the old village settlement was removed, and the new town of Breda (Newtownbreda) came into existence.

Passing the old ice-house, the bank of the Lagan backwater was reached, along which flits the Kingfisher, and where many interesting plants grow, including the rare Bird's nest Orchis. The Giant Hog-weed is here in great profusion. The botanists also found the Bitter Cress, the Tutsan, and the Adder's Tongue. Round the margin of the lake the zoologists found, among moss and damp leaves, many very small land shells such as *Vertigo substriata*, *V. pigmæa*, and *V. antivertigo*, with *Sphyradium edentulum* and *Acanthinula aculeata*. Under some decaying wood *Hyalinia alliaria*, by its strong odour, fully justified its

common name of the Garlic Snail. In the lake fine specimens of the Coil Snail (*Planorbis alba*) were much more abundant than usual, with many *P. carinatus* of the non-typical Lough Neagh basin form. There were many *Bithynia tentaculata* and some *Sphaerium lacustre*. A freshwater polyzoan was collected also, for microscopical examination. Freshwater beetles and leeches were abundant.

HADRIAN'S WALL AND HEXHAM.

Date—11th to 14th July, 1925. Conductor—A. McI. Cleland.
Number present, 22.

The "Long Excursion" had Hadrian's Wall, the most famous Roman relic in Great Britain, as its venue. The party left Belfast on the evening of Friday, 10th July, for Stranraer, and travelling in reserved compartments on the Stranraer—Carlisle—Newcastle boat express, reached Hexham at 2-25 a.m. on Saturday. By 10-30 all were ready for a strenuous day of sight-seeing. A motor coach carried them to Chesters and the camp at Cilurnum, with Major R. C. Hedley as guide for the day. Proceeding to Chollerford, they walked down the left bank of the North Tyne to the remains of the Roman bridge, now much overgrown with ivy, but still most interesting. After lunch at the "George" Inn at Chollerford, the Limestone Bank was visited, to inspect a section of the north ditch of the Wall, where it has been cut through a basaltic dyke. Here the Wall rises to about 600 feet.

The next stop was Houghton Castle, reached after a journey down break-neck hills and along narrow lanes with almost impossible turnings. After a survey of the ancient building, the party drove on to Brunton House, where a fine piece of the Wall was inspected.

On reaching Hexham again, the members were welcomed by Mr. J. Gibson, F.S.A., F.C.S., who with Councillor Knight (Chairman of the District Council) and the members of the Hexham Field Club, listened to a fine address by Col. Berry, M.R.I.A., on "Arthurian Associations of the Wall."

On Sunday most of the party attended service in the ancient Abbey Church of Hexham in the morning, and in the afternoon visited Bywell Castle, the residence of Mr. C. O. P. Gibson, a 14th century tower to which a modern residence has been added. Mr. Gibson led the way through

the tower to the battlements, which command a magnificent view of the Tyne. Afterwards he showed them the Anglo-Saxon (pre-Conquest) Church of St. Peter, close by. Across the road is another church of the same period, St. Andrew's. Before leaving, tea was hospitably provided by Mr. Gibson.

Monday morning found the party on its way to Borcovicus Camp, with Mr. J. Gibson as guide. The journey was then continued to Gilsland, passing Thirlwall Castle on the way. At Gilsland vicarage, the Rev. W. Webb pointed out the fine remains of the Wall running through his garden. After examining all that is left of Willowford Roman bridge, and the ancient remains of Lanercost Priory, a return was made to Hexham. At 9-15 p.m. the members met the Hexham Field Club in the ballroom of the hotel to hear a lecture from Mr. J. Gibson on Hexham Abbey, illustrated by a fine series of lantern slides. Mr. Gibson was heartily thanked by Mr. Cleland, Mr. R. S. Lepper, M.A., and the Rev. D. Maconachie, B.D.

On the final day (Tuesday), Major Hedley was guide. The section of the vallum at Hillhead, near Corbridge, was inspected, the party afterwards going on to the site of the Roman city of Corstopitum. Afterwards there was a brief halt at the Saxon church of Corbridge, after which the Tyne was crossed and a visit paid to Dilston Castle, where by kind permission of Viscount Allandale the interesting old home of the Jacobite Earls of Derwentwater was inspected. Four o'clock found all members assembled in the venerable Abbey Church of Hexham, and an interesting hour was spent in examining every detail of this fine old structure, under the guidance of the genial vergier, Mr. W. Dodds.

At 12-45 a.m. the return journey was begun, and Belfast was reached in good time on Wednesday morning.

The Club is deeply indebted to the gentlemen who acted as guides, to the members of the Hexham Field Club for their fraternal attention, and to the good people of Hexham and neighbourhood generally who vied with each other in showing kindness to the Irish visitors.

BARONS COURT.

Date—25th July, 1925. Conductors—R. J. Welch and A. Albert Campbell. Number present, 60.

By kind permission of His Grace the Duke of Abercorn the old woods and demesne of Barons Court were visited.

Members travelled by the G.N.R. 8-25 a.m. limited mail, which, by the courtesy of the District Superintendent, stopped specially at Newtownstewart to allow our party to alight. Mr. W. Ross Henderson, who kindly attended to the local transport, etc., and Mr. W. T. Miller, M.P., were on the platform on the arrival of the train. On the way from the station, the old bridge (built in 1727), with its masses of foliage, was examined with interest, and the adjacent site of an O'Neill castle at "Pigeon Hill" was pointed out. Proceeding to the Cornmarket, the Stewart Plantation castle was inspected, Mr. Campbell giving a short talk on the history of the castle and town. Reference was made to a *cause celebre* of its day, "the Newtownstewart murder," and on the way up the Main Street the Northern Bank, the scene of the crime, was pointed out. Mr. Miller then took the party into the Parish Church to see the 1634 memorial of Lady Montgomery, of the Ards, Co. Down, mother of the historian of the Montgomery family. Harry Avrey's castle, an O'Neill fortress on an eminence overlooking the town and the Mourne valley, next claimed attention, Mr. Campbell again giving an historical sketch, his remarks being supplemented by Mr. Miller.

A fleet of motors conveyed the party to Barons Court. An *al fresco* lunch was partaken of on "the Milking Hill," following which Mr. R. S. Lepper gave an interesting account of the Hamilton family history in Scotland and Ireland. Mr. Robert Bell, J.P., the estate manager, and his assistants here took charge and conducted the party to places of interest in the demesne, which comprises 5,000 acres. The old cypress avenue first attracted attention, then some fine beds of royal ferns in which many plants of *Lilium superbum* protruded their orange heads above the fern fronds.

The old castle in the woods, described by the late Lord Belmore in his "Ancient Castles of Tyrone," was visited, as was "the Wild Garden," under the guidance of Mr. Yeo, the head gardener, with its wealth of both garden and wild flowers. Here some very interesting plants are seeding themselves or running riot in a most picturesque fashion. Among these is the *Lilium superbum*, already mentioned, and that cousin of the sunflower, *Telecia speciosa*, a gentian, and a great mass of the Canadian beech fern. Here also some fine masses of bright crimson spiræas and a number of rare shrubs coming into flower add much variety to a most charming spot.

The zoologists found that a freshwater shell discovered on a previous visit of the Club, and not yet identified, had disappeared from one of the ponds owing to the spread of the bog bean.

After an excellent tea in the Abercorn Hotel, the return to Belfast was made by the 7-23 train.

REDHALL GLEN.

Date—8th August, 1925. Conductors—Robert Bell and Nathaniel Carrothers. Number present, 56.

The Old Mill Glen, anciently known as Altfracken, was the objective of an afternoon field meeting. Permission for the visit was kindly given by Mr. G. S. Reade, J.P. On arrival in Redhall demesne, Mr. A. A. Campbell, at the request of the conductors, spoke of some of the historical associations of the place, and Mr. Robert Bell pointed out its geological features, an almost complete epitome of the geology of Co. Antrim.

The Glen has been cut through the chalk by a stream from higher ground. The wider portion affords a suitable habitat for some choice wild flowers. The cliffs at the upper end are completely covered with ferns. Among the plants noted by the botanists were Alpine Enchanter's Nightshade, Bird's nest Orchis, and Broad-leaved Helleborine.

Leaving the demesne by the upper gate at Ballycarry village, the party enjoyed an excellent tea in the new refreshment rooms, and then visited the old churchyard which contains the tombs of the Rev. Edward Brice, the earliest Presbyterian minister in Ulster; James Orr, the poet; and Willie Nelson, the young '98 rebel. Black Spleenwort, a lime-loving fern, was found growing thickly on the walls of the old church.

ARMAGH AND DISTRICT.

Date—22nd August, 1925. Conductor—Joseph Skillen. Number present, 63.

The party left Belfast in two motor coaches at 9 a.m., proceeding *via* Lisburn, Lurgan, Portadown and Loughgall. Before reaching Loughgall a halt was made to afford Mr. R. Bell an opportunity of showing the botanists a habitat of the rare *Juncus glaucus* which he had recently discovered. On arrival at Armagh, Mr. O'Hagan, chairman of the Urban Council, and Mr. Lennon, town clerk, welcomed the Club

to the city, and the latter gentleman and Mr. Delnege Trimble, of the "Armagh Guardian," accompanied the party to the various places of interest visited during the day. The first call was at the Roman Catholic Cathedral, where, as they approached up the long flight of steps, the carillon burst into the "Londonderry Air," and other selections followed. The interior of the magnificent building, to which the verger acted as guide, was greatly admired. A visit to the Library and the Protestant Cathedral followed.

After lunch the party proceeded to Emania, locally known as "Navan Fort." Mr. Skillen briefly recapitulated the legends connecting the place with Queen Macha, King Conor MacNessa, Deirdre "of the sorrows," the sons of Usna, and the Red Branch Knights. In an adjacent quarry the geologists got busy with hammer and chisel, and the botanists fished out fine specimens of snake-weed from the quarry ponds.

Before leaving Armagh a short visit was paid to the Observatory, where Mrs. Ellison and her sons, in the absence of the astronomer (Rev. W. F. Ellison) pointed out everything of interest.

THE NARROWS, STRANGFORD LOUGH.

Date—5th September, 1925. Conductor—James Orr.
Number present, 46.

The last full Club excursion of the season was to Strangford district. The motor coaches left Belfast in a steady downpour of rain, and proceeded *via* Saintfield, Crossgar and Downpatrick to Strangford. By this time the rain had cleared off, and brilliant sunshine was enjoyed for the remainder of the day. Rev. Canon Foster, rector of Strangford, joined the party, and acted during the day as "guide, philosopher and friend." On reaching Kilclief, the zoologists diligently proceeded with shore collecting until stopped by the rising tide. The conductor's prize was an incentive, and in the afternoon, when the result was announced, it was found that the winner (Mrs. Nodder) had collected seventeen species illustrative of the marine fauna of the district.

A visit was paid to Kilclief Church to inspect the interesting Anglo-Norman sculptured slabs, now in and outside the porch.

Returning to Strangford, Canon Foster exhibited some rare plants growing in the rectory garden, and then led the

way to Lord De Ros's demesne to see Oldcourt Chapel, of which the foundation stone was laid in 1630.

Castleward was then visited by permission of Lord Bangor. Audley's Castle was seen across the Temple Water, but time did not admit of a closer view. Leaving Castleward, the next halt was at the old church of Raholp, and Mr. A. A. Campbell gave an outline of its history.

At Downpatrick, which was reached at about 6 p.m., Dean Carmody took the archæologists to see some recent discoveries. After tea at Magee's Hotel, the party left for Belfast.

CONVERSAZIONE.

The annual *Conversazione* was held in the Assembly Hall, Fisherwick Place, on Tuesday evening, October 20th, 1925. The attendance, as usual, was large, and the exhibits interesting. The principal exhibits included—

Botany.—Capt. Chase, plants from the south of France; Shaftesbury House students, collection of fruits; N. Carrothers, alien plants; E. N. Carrothers and A. E. Muskett, fungi, including their role in causing plant diseases; Municipal Museum, models of flowers, showing adaptation to bring about cross pollination; Miss M. Grace Patterson, collection of plants (mounted) from summer excursions, 1925; E. J. Merrill, reproduction of algæ; S. A. Bennett, seeds of wild plants mounted as dark slide objects, carices of N.E. Ireland; Professor Small, some xerophytes; C. R. Nodder and Miss Davin (Linen Research Institute), model of the flax plant, etc.

Geology.—Robert Bell, zonal cephalopoda from lower Lias, Co. Antrim; A. McI. Cleland, alabaster from Triassic marl, Whitehead; lignite from Swanage, Dorset; chalcedony and hullite from Carnmoney; fossils from Kimmeridge clay, Dorset; T. Edens Osborne, collection of fossils; R. J. Welch, Pleistocene and Holocene land and freshwater shells.

Zoology.—James Orr, marine shells; W. M. Crawford, butterflies and moths; A. McI. Cleland, tree snails from Sandwich Islands, selection of cowries; James Orr, J. A. S. Stendall, and Municipal Museum, Irish birds of prey; R. J. Welch, freshwater pearl mussels; D. J. Carpenter, common marine objects.

Archæology.—Joseph Skillen, stone and flint implements, ethnological objects, pottery from Hadrian's Wall;

Dr. Hill (Larne), bronze implements; R. H. Common, crude flints from the surface of Ballygally Head, surface scrapers from near Larne.

There were also interesting photographic and miscellaneous exhibits by Mr. T. E. Osborne, Mr. R. J. Welch, Mr. A. McI. Cleland, Mr. E. N. Carrothers, Mr. Joseph Skillen, Mrs. M'Crum, Dr. M'Master, and Miss Mawdsley.

After tea a short business meeting was held at which new members were elected, and the Club Medal for 1925 was presented to Mr. Nathaniel Carrothers.

A lantern display of photographs taken at the summer field meetings concluded the proceedings.

WINTER SESSION.

The authors of the various Papers, of which abstracts are given, are alone responsible for the views expressed therein.

A WALK ROUND MY GARDEN: A TALK ON THE WONDERS OF THE COMMONPLACE.

The opening meeting of the Winter Session was held in the Museum, College Square North, on Tuesday, 17th November, 1925, when the President (Mr. James Orr, M.B.O.U.) delivered the inaugural address.

Mr. Orr prefaced his lecture by stating that the opinion, once widely held, that a liberal education was incomplete which did not include foreign travel, was a sound, though an idealistic one. Contact with strange peoples, with their strange customs, clothing and food, and with different modes of thought; contact also with different natural phenomena from those to which we are accustomed could not fail to strike the imagination and stimulate thought. In practice, however, it had its limitations, principally of a financial nature. Foreign travel was only possible for a mere fraction of the population. If the chief advantage of foreign travel as a factor in education was to stimulate thought through the senses, by bringing them in contact with the strange, the wonderful, the bizarre, this object can be attained by travel at home. We have no need to go beyond the confines of our gardens or the limits of a country walk to find all the stimulus we require. Carlyle contended that the best university was a collection of books, and it might be claimed that the best substitute for foreign travel was an intensive study of the common objects of our gardens and

countryside. This study would reveal more marvels in a very restricted area than would be observed by most travellers during a very extensive tour.

The lecturer went on to illustrate this point by describing some of the marvels he had observed in his own garden. He narrated the life history of the tree wasp (*Vespa norvegica*) which he described as the first paper maker; of the solitary mud wasp, which packed away in a clay-built cell food for its offspring in the form of living caterpillars, stung to insensibility; and of ichneumon flies which deposited their eggs in the living tissues of caterpillars. Other subjects dealt with included the loves of the spiders, climbing plants, birds of the garden, hedgehogs, rats, rabbits, etc.

The talk was illustrated by a collection of lantern slides, and the discussion which followed was taken part in by Messrs. J. A. S. Stendall, M.B.O.U., J. M'Caw, B.A., and R. S. Lepper, M.A.

THINGS SEEN AT THE ROMAN WALL.

The second ordinary meeting of the Winter Session was held in the Old Museum on 15th December, 1925, when Miss Willielma J. Sayers, B.A., gave a lecture on above subject. The President (Mr. James Orr, M.B.O.U.) occupied the chair.

Miss Sayers was with the Club on its visit to Northumberland in July, and having spent a week with the excavators at work on Hadrian's Wall in the autumn, had an interesting story to tell, and told it in a fascinating way.

The latest researches tend to show that the southern and eastern parts of Britain were thoroughly Romanised and probably Latin-speaking, whilst the line of the wall marks not so much a barrier against invading foes from the north as a great frontier patrolled by thousands of troops acting as police and customs officials, this frontier being part of Hadrian's world-wide scheme for marking the limits of the Roman Empire.

The lecturer also gave some account of the gods worshipped by the Roman soldiers in Britain, pointing out that not only the religion but the art and architecture of the Roman occupation showed clear traces of Celtic influence.

The lecture was illustrated by numerous slides, mostly lent by Mr. Cleland and Mr. A. R. Hogg, showing not only

the Roman Wall, its forts, mile-castles and turrets, the vallum and its gaps; but many of the "finds" unearthed in the neighbourhood.

Miss Sayers was heartily congratulated on her masterly treatment of the subject by the President and Messrs. A. McI. Cleland, R. S. Lepper, M.A., and J. A. S. Stendall.

PLANT PARASITES AND SAPROPHYTES.

The third ordinary meeting of the Club was held in the Old Museum on Tuesday evening, 5th January, 1926, the President (Mr. James Orr, M.B.O.U.) in the chair.

Mr. Arthur Deane, F.R.S.E., M.R.I.A., delivered a very interesting lecture on plant parasites and saprophytes. He has made a special study of this subject, and with the help of a large number of excellent lantern slides and a few Museum preparations he imparted a considerable amount of information in the course of his lecture.

At the close the appreciation of the members present was expressed by the President, and Messrs. R. J. Welch, M.Sc., M.R.I.A., J. A. S. Stendall, M.B.O.U., A. H. Davison, F.R.S.A.I., and James Loughridge.

ZOO STUDIES.

The fourth ordinary meeting of the Winter Session was held in the Old Museum, on Tuesday evening, 19th January, 1926. The President (Mr. James Orr, M.B.O.U.) occupied the chair.

The lecturer for the evening, Mr. D. J. Carpenter, A.R.C.Sc.L., dealt with characteristic types of mammals, reptiles and a few batrachians. The nest-building habit of apes, the value of pattern in tabbies and other cats, the comparison of the rhinoceros and the hippopotamus, and the aquatic adaptations of the seal family, formed part of much interesting matter about the higher mammals. On the lower rungs of the mammalian ladder the kangaroo as a marsupial, and the egg-laying duck-mole and echidna—links between mammals and reptiles—were dealt with.

Among the reptiles, tortoises with bony armour and its formation, running tortoises with soft shells, turtles with leathery coats, and the habits of crocodiles and snakes were described.

In the last part of his lecture, Mr. Carpenter described interesting experiments made upon various animals, such as

cretinism and the effect of thyroid extract upon the development of tadpoles and other batrachians.

The lecture was fully illustrated by a fine series of lantern slides, and was favourably commented on by the President and Messrs. J. A. S. Stendall, M.B.O.U., and R. S. Lepper, M.A.

HISTORICAL PLACES ROUND BELFAST.

The fifth ordinary meeting of the Winter Session was held in the Old Museum, on Tuesday evening, 2nd February, 1926, the President (Mr. James Orr, M.B.O.U.) in the chair.

Mr. Francis Joseph Bigger, M.R.I.A., delivered a lecture on places of historical interest in the neighbourhood of Belfast—the Cavehill in many aspects, Ardglass, its castles, fish and birds; Strangford Lough's varied history, Lough Neagh in song and story, the Giant's Ring, lost in the past, and Carrickfergus in the old days.

In the course of his remarks he referred in scathing terms to the recent destruction of the house of the White Canons at Whiteabbey, a thirteenth century foundation. This building, with its three tall windows and walls standing sixteen feet high and four feet thick, had now been levelled with the ground, and the stones carted away and used for building and road-making.

The indignation of the meeting was voiced by the Right Hon. Samuel Cunningham and Messrs. H. C. Lawlor, M.R.I.A., R. J. Welch, M.R.I.A., James Loughridge and Hans Iten.

BUTTERFLIES AND MOTHS.

The sixth meeting of the Winter Session was held in the Old Museum on Tuesday evening, 2nd March, 1926. The President (Mr. James Orr, M.B.O.U.) occupied the chair.

The lecturer for the evening was the Rev. Canon George Foster, B.D., of Strangford, and his subject was " Butterflies and Moths."

Canon Foster said that there exists a symbiosis between butterflies and flowers, the one helps the other to live. The butterfly or moth, as perfect insect, lives on the honey, which by means of its proboscis-like sucking mouth, it sips out of the flowers, but on the other hand by carrying the pollen grains from flower to flower, it enables the plants and

trees to fertilize. Even now with the opening of the flowers the butterflies come, and so it was in the story of creation; then, too, they came when the flowers came. It was during the Cretaceous age—when the Chalk of the Cave Hill was laid down—that butterflies and flowers began to come fully into their own.

Butterflies and moths are called lepidoptera, “scale wings.” They are remarkable among insects for their complete metamorphoses—the egg, the caterpillar, the pupa, and the perfect insect. Their great foes are the ichneumon flies, which puncture the eggs, or the caterpillars, and then, by means of a long auger-shaped ovipositor, lay their own eggs under the shell or skin. These eggs in turn hatch out and live upon the blood of their prey. This blood is free within the caterpillar, not confined within veins and arteries. The skeleton and limbs of a butterfly consist of “chitin,” a substance resembling gristle, and is entirely on the creature’s outside. The flight of a butterfly is a movement resembling breathing, the wings move with the chest, which is contracted or expanded by internal muscles. The marvellous eye of the butterfly was then described in detail. “Man,” said the lecturer, “is a creature of sight and sound, but the butterfly lives mostly by scent. Instead of sweet harmonious sounds and words of eloquence flowing from their tongues, butterflies communicate with one another by sweet scents that flow from the scent organs to be found upon their wings, hidden in the head, or on a forearm that has been converted into an organ to diffuse scent.”

The lecture was fully illustrated by lantern slides, and was followed by an animated discussion in which Messrs. J. A. S. Stendall, M.B.O.U., D. J. Carpenter, A.R.C.Sc.L., and R. J. Welch, M.Sc., M.R.I.A., took part.

THE RIVER LAGAN FROM SOURCE TO SEA.

The seventh meeting of the Winter Session was held in the Old Museum on Tuesday evening, 16th March, 1926, the Vice-President (Mr. W. M. Crawford, F.E.S., F.Z.S.) in the chair.

Mr. A. R. Hogg lectured on above subject. He treated it historically, archæologically and pictorially. As might be expected from a photographic artist of Mr. Hogg’s culture and skill, the pictorial element predominated, and a splendid set of slides—about 200—was screened.

The Lagan was traced from its source in Slieve Croob, past Dromara, Dromore, Donagheloney, Waringstown, Magheralin, Moira, Hillsborough, and Lisburn to Belfast, every church, hamlet, dolmen, rath, bridge, and scenic gem on its banks being depicted with consummate art and suitably described.

The appreciation of the members was expressed by the Vice-President, and Messrs. R. J. Welch, M.Sc., M.R.I.A., and A. McL. Cleland.

The Chairman congratulated Mr. J. A. Sidney Stendall, M.B.O.U., a past President of the Club, on his election to membership of the Royal Irish Academy.

GEOLOGY AND DENUDATION.

The eighth meeting of the Winter Session was held in the Old Museum, on Tuesday evening, 30th March, 1926. The President (Mr. James Orr, M.B.O.U.) occupied the chair. Mr. A. McL. Cleland was the lecturer.

Mr. Cleland defined denudation as the accumulated effects of various agencies, such as water, ice, wind, and chemical action, in destroying rocks. He illustrated the comparative slowness of denudation under certain circumstances by a series of views showing extinct volcanoes in the Auvergne district of Central France. River erosion was indicated by views of the River Tarn, in the Cevennes, and County Galway; while marine erosion was dealt with by illustrations drawn from Donegal. Attention was drawn to the former action of marine erosion as exhibited in the ripple-marked sandstones of Scrabo quarry, whilst the effects of wind were shown by photographs of rocks in the Mourne mountains. Ice action was dealt with very fully, the remains of glacier action being illustrated by subjects such as the erratic blocks of Antrim and Down. The lecturer showed an interesting series of "mushroom" rocks from County Galway to indicate the curious effects due to chemical action sometimes revealed in limestone. The growth of a chalk cliff was fully dealt with, illustrations being drawn from various chalk cliffs of the Antrim coast.

The views shown were all very carefully selected, as far as possible being drawn from local sources.

At the close several questions arising out of the lecture were keenly discussed by Messrs. S. A. Bennett, B.A., B.Sc., R. J. Welch, M.Sc., M.R.I.A., A. H. Davison, F.R.S.A.I., J. A. S. Stendall, M.R.I.A., R. S. Lepper, M.A., and Captain Turner.

IN NATURE'S HAUNTS.

The ninth and final meeting of the Winter Session was held in the Old Museum, on Tuesday evening, 13th April, 1926, the President (Mr. James Orr, M.B.O.U.) in the chair.

Mr. J. A. Sidney Stendall, M.R.I.A., M.B.O.U., gave a racy talk on wild life. Commencing with springtime and its natural beauties, he dealt with birds and their nesting habits, and with some of the commoner flowers. The story of how a female woodcock was observed to carry her young to the place of safety was particularly interesting, as were the remarks on protective colouration among animals.

An unofficial excursion by some members of the Club to a not far distant island was described, and many excellent slides of the birds which dwell there shown. A particularly fine series was that showing the story of the Herring Gull from egg to adult. How the little grebe or dabchick rescued its offspring proved highly entertaining, as did the history of one "Henry," a wayward but intelligent owl.

The slides used, many of them in colour, were from the lecturer's own photographs. A short discussion followed the lecture in which the following took part:—Mr. Charles E. Kerr, B.A., Rev. W. R. Megaw, B.A., Rev. E. A. Armstrong, B.A., Mr. R. J. Welch, M.Sc., M.R.I.A., and Mr. James Loughridge.

Prior to the lecture the report of Mr. D. J. Carpenter, A.R.C.Sc.L., as representative of the Club at the Conference of Delegates of Corresponding Societies of the British Association, was read in his absence by Dr. Deans, and on the motion of Mr. A. Albert Campbell, F.R.S.A.I., seconded by Mr. R. S. Lepper, M.A., was adopted.

ANNUAL MEETING.

The Annual Meeting was held in the Museum, College Square North, on Tuesday, 20th April, 1926, at 8 p.m., the President (Mr. James Orr, M.B.O.U.) in the chair.

The following reports were presented:—

ANNUAL REPORT.

The Committee has pleasure in submitting its Sixty-third Annual Report, as follows:—

During the year 38 Members resigned and 6 Members died. Three Members were transferred, one to the Dublin Club and two to the Route Club. The names of several Members whose subscriptions were over two years in arrear were removed from the roll.

47 Ordinary and 38 Junior Members were elected.

Ten meetings of Committee were held during the year, at which the attendances were as follows:—

Robert Bell	...	...	8	C. E. Kerr	...	...	5
S. A. Bennett	...	...	6	R. S. Lepper	...	...	9
A. A. Campbell	...	...	10	S. M. Macoun	...	...	0
D. J. Carpenter	...	...	6	Rev. W. R. Megaw	...	...	6
N. Carrothers	...	...	9	James Orr	...	...	8
Capt. Chase	...	...	5	T. E. Osborne	...	...	6
A. McI. Cleland	...	...	8	Miss Sayers	...	...	7
W. M. Crawford	...	...	10	J. Skillen	...	...	6
A. H. Davison	...	...	10	J. A. S. Stendall	...	...	10
Dr. Deans	...	...	8	R. J. Welch	...	...	8
J. R. H. Greeves	...	...	4				

Eight Summer Field Meetings were held:—

Benevenagh and Magilligan	...	...	...	20th May	...	51 Present.
Sallagh Braes	...	...	...	13th June	...	42 "
Belvoir Park	...	...	...	27th June	...	112 "
Hadrian's Wall	...	...	...	11th to 14th July	...	22 "
Barons Court	...	...	...	25th July	...	60 "
Redhall Glen	...	...	...	8th August	...	56 "
Armagh and Emanla	...	...	...	22nd August	...	63 "
The Narrows	...	...	...	5th September	...	46 "

The " Long Excursion " in July, to a place outside Ireland, marked a new departure in the history of the Club. The success of the very pleasant and profitable visit to the Roman Wall in Northumberland justified the experiment.

The Reports of the Sections will be presented by the respective Sectional Secretaries.

The Annual Conversazione, held in the Assembly Hall, Fisherwick Place, on October 20th, was, as usual, largely attended by Members and their friends.

The Club Medal for 1925 was awarded to Mr. Nathaniel Carrothers.

Nine meetings were held during the Winter Session, when the following Lectures were delivered and Papers read:—

1925.

- November 17 ... A Walk Round My Garden.
JAMES ORR, M.B.O.U.
- December 15 ... Things Seen at the Roman Wall.
MISS SAYERS, B.A.

1926.

- January 5 ... Plant Parasites and Saprophytes.
ARTHUR DEANE, M.R.I.A., F.R.S.E.
- January 19 ... Zoo Studies.
D. J. CARPENTER, A.R.C.SC.L.
- February 2 ... Historical Places Round Belfast.
F. J. BIGGER, M.R.I.A.
- March 2 ... Butterflies and Moths.
REV. CANON FOSTER, B.D.
- March 16 ... The River Lagan from Source to Sea.
A. R. HOGG.
- March 30 ... Geology and Denudation.
A. McI. CLELAND.
- April 13 ... In Nature's Haunts.
J. A. S. STENDALL, M.R.I.A., M.B.O.U.

All these meetings were well attended.

Mr. D. J. Carpenter represented the Club at the Annual Conference of Delegates of Corresponding Societies of the British Association, and duly presented his Report.

The Committee desires to thank Mr. Stewart for permission to inspect the Knockdhu souterrain; Mr. William Johnston for permission to visit Belvoir Park; Major Hedley, Mr. J. Gibson, F.S.A., Mr. C. O. P. Gibson, the Misses Cruddas, and the Hexham Field Club for assistance at the excursion to Hadrian's Wall; His Grace the Duke of Abercorn and his Estate Manager (Mr. Robert Bell, J.P.), and Messrs. W. R. Henderson and W. T. Miller, J.P., M.P., in connexion with the visit to Barons Court; Mr. G. S. Reade, J.P., for permission to visit Redhall Glen; Mr. Lennon, Town Clerk of Armagh, Mr. Delmege Trimble, Mrs. Leeman and family, and Mrs. Ellison (The Observatory), for help at the excursion to Armagh and Emania; and Lord Bangor, Dean Carmody, and Canon Foster in connexion with the Strangford excursion.

The Committee wishes also to acknowledge the courtesy of the "Belfast Telegraph" and the "Northern Whig" in publishing reports of our Summer Field Meetings and

Winter Lectures, and to thank the London, Midland and Scottish Railway Company and the Great Northern Railway Company for their kindness in arranging for our comfort on several occasions.

JAMES ORR, *President.*

A. A. CAMPBELL, } *Hon. Secretaries.*
T. M. DEANS, }

DECEASED MEMBERS.

Miss Louie Stuart.
William Faren, F.R.S.A.I.
Charles Meakin.
George Ward.
Hugh G. Larmour, J.P.
W. A. J. M'Bretney.

HON. LIBRARIAN'S REPORT.

The utility of the Library is greatly limited by the want of a Reading Room open to Members of the Field Club at hours convenient to them, the collection still being stored, by courtesy of the Belfast Corporation, in one of the rooms of the Old Museum. Access to this is naturally much restricted.

Until, therefore, through the opening of the new Municipal Museum or otherwise, the Field Club can get the use of a room readily accessible, with a qualified person in charge of its contents, it is hard to see how our Members can benefit much from the scientific journals, reports, books and herbarium, which now have to be stored in the small space that can be spared in a room belonging to another body.

Owing to my living so far out of Belfast, and to the pressure of other unavoidable work, it has been impossible for me to devote the time I should have wished to the duties of Librarian, which have been, however, most kindly and efficiently discharged by Mr. W. M. Crawford, Vice-President, the Librarian of the previous year.

The further publications of the United States Geological Survey received during the year are being handed over to the University Library, according to the arrangement made during the year 1922-3.

The Reports and Proceedings received from other Institutions and Societies have been duly acknowledged, entered in our stock register, and arranged.

R. S. LEPPER, *Hon. Librarian.*

REPORT OF HON. RECORDING SECRETARY.

The records collected during the year 1925, though not great in number, are interesting. In zoology we have the first county record of the Long-tailed Skua, *Stercorarius longicaudus* Vieill., a male bird shot on 9th September at Castlerock, Co. Londonderry, and sent to me for identification by Mr. W. G. Byron.

During a great storm on 23rd April a specimen of Leach's Fork-tailed Petrel, *Oceanodroma l. leucorhoa* (Vieill.), was found in an exhausted condition near Ballymoney Railway Station, having struck the telegraph wires. It was sent to me for identification, being received alive and apparently unhurt. After examination the bird was released and flew strongly on a N.E. course.

The following are the earliest records of the arrival of spring migrant birds:—

Chiffchaff—2nd April, Ballyknockan, Co. Down.

Sand Martin—4th April, Belfast.

Cuckoo—5th April, Ballysillan, Belfast. Bird seen but did not call. (Previous year's record at same place 26th April.) The earliest note of the Cuckoo calling is 21st April, at Hillsborough, Co. Down.

Willow Warbler—8th April, Ballyknockan, Co. Down.

Swallow—11th April, Belfast.

Corncrake—20th April, near Belfast.

Common Sandpiper—20th April, Ballyknockan, Co. Down. Only one bird seen.

House Martin—26th April, Belfast.

Swift—4th May, Belfast. (Previous year's record for same locality 12th May.)

A specimen of the Greater Pipe-fish, *Syngathus acus*, L. was found on the shore at Castlerock, Co. Londonderry, on 17th April, and sent to the British Museum for identification.

The most important botanical records are those of several mosses collected by Rev. W. R. Megaw, B.A., and noted on p. 77, Vol. 1, No. 4, "Irish Naturalists' Journal." Included are several species new to Ireland and many new county records.

In July the Bird's-nest Orchis, *Neottia Nidus-avis* Rich., was reported from Kilrea, Co. Londonderry.

J. A. SIDNEY STENDALL, *Hon. Recording Secretary.*

REPORT OF THE BOTANICAL SECTION.

The membership of this Section now stands at 42, showing a gratifying increase of 10 Members over the previous year's return. During the 1925 season the following Sectional Excursions were held:—

Cloughfin, 17th May, 6 present.

Carr's Glen, 4th June, 14 present.

Squire's Hill, 21st June, 6 present.

Magheramorne, 5th July, 5 present.

Comber Estuary, 11th July, 9 present.

In addition to the plants noted by Members of the Section on the ordinary Club excursions, the following plants were seen:—

In Carr's Glen—*Ophioglossum vulgatum*, *Asperula odorata*.

On Squire's Hill—*Mimulus guttatus*.

At Magheramorne—A magnificent display of *Ophrys apifera* with *Orchis pyramidalis* and *Tripolium procumbens*. *Festuca rigida* was also seen near the Railway Station, Magheramorne.

It is hoped that during 1926 more Members of the Section will avail themselves of the opportunities offered by the Section.

S. A. BENNETT, *Hon. Secretary.*

REPORT OF GEOLOGICAL SECTION.

The Section has had a fairly successful Summer Session, making four visits in all, viz., Carnmoney, Cavehill, Coalpit Bay and Scrabo. A projected visit to Portrush had to be abandoned for this session.

All the excursions were favoured with excellent weather, were well attended, and once again the camera was put to good use, particularly at Scrabo Quarries, where some really good views were obtained.

At Carnmoney several very fine pieces of "hullite" were found. Also some good specimens of vesicular dolorite, the vesicles being lined with "hullite."

At Coalpit Bay the graptiliferous shales were found, well below high water mark, and some graptolites were secured. Also south of Coalpit Bay the members discovered a small bed of peat, topped by a raised beach, covering the underlying Silurian rock. A number of well preserved hazel nuts were obtained from the peat.

An excellent view was secured at Scrabo north quarry showing a vertical basaltic dyke enclosing a "laccolite" of Triassic sandstone.

The funds of the Section show a slight credit balance.

A. McI. CLELAND, *Hon. Secretary.*

REPORT OF ZOOLOGICAL SECTION.

No special excursions were held of this Section, but the general monthly excursions were well attended by the members. A good deal of collecting was done, especially on the Belvoir Park and Strangford Lough Narrows excursions. At the latter a number of collections of mollusca and echinoderms were handed in, in competition for a special prize offered, the collections being made along the shore near Kilelief old castle.

R. J. WELCH, *Hon. Secretary.*

REPORT OF ARCHÆOLOGICAL SECTION.

The Archæological Section had a very successful session. During the summer we had three Field Excursions to Antrim and Muckamore, Lagan Canal and Lisburn, and Greyabbey, and in the winter one lecture by the Secretary, on Monasticism. The idea of having a lecture during the winter was to keep the members of the section in touch with one another. All the summer meetings were well attended, as was the winter lecture. The membership stands at 45. We have to specially thank Mrs. Thompson, Muckamore Abbey, and the Rector of Lisburn, Canon Taylor, for their kindness on the occasion of our visits to Muckamore and Lisburn Cathedral.

JOSEPH SKILLEN, *Hon. Secretary.*

REPORT OF JUNIOR SECTION.

During the summer nine excursions took place. Five of these—to Holywood, Cavehill Quarry, Purdysburn Glen, Rademon Demesne, and Drumbo Glen—were undertaken by

the Juniors alone. In addition, Carrickfergus Castle, Belvoir Park, Carr's Glen, and the Narrows, Strangford Lough were visited conjointly with the Seniors.

For their kind assistance at certain excursions we have to thank Miss Sayers, Dr. Deans, Mr. Stendall and Mr. Bennett. We also have to express our gratitude to Col. Sharman Crawford for permission to visit Rademon Demesne, and to the Rev. J. J. Magill for his kindness in conducting the party over it and very hospitably entertaining them at the manse.

At the Annual Conversazione the Juniors were well represented, and the following gained prizes:—

For the best growing Botanical Exhibit—Miss Nora Stendall.

For the best living Zoological Exhibit—Miss Agatha Crawford.

For Field Work during the year the following awards were made:—

Club Prize for best Set of Photographs illustrating any one branch of Field Work with Notes on same—Master R. H. Crawford.

The Rev. W. R. Megaw's Prize for the best Collection of Mosses—Miss Agatha Crawford.

Mr. R. J. Welch's Prize for the best Collection of Marine Shells—Miss Norah Neill.

Finally it may be mentioned that there seems to be a revival of interest in this Section, and this is evidenced by the increase in the numbers attending the excursions, for at the commencement of the year the average attendance was about 8, and towards the end about 22. Further, those present showed a spirit of keen enjoyment and enthusiasm.

It is recommended that all application forms of the Juniors in future should bear the dates of birth.

D. J. CARPENTER, *Hon. Secretary.*

Dr.

Hon. Treasurer's Account for the Year ending 31st March, 1926.

Cr.

Balance from Year 1924-25	...	£16 16 1	Printing and Stationery	...	£51 15 3
Subscriptions received, including at 5/-	Arrears—546	136 10 0	Postage	...	28 0 7
Subscriptions paid in advance for Year 1926-27—			Hire of Museum Rooms	...	9 0 0
17 at 5/-	...	4 5 0	Hire of Lantern	...	8 0 0
46 Entrance Fees at 5/-	...	11 10 0	Fire Insurance	...	0 10 0
Affiliation Fee, Route Naturalists' Field Club	...	0 5 0	Delegate to British Association	...	2 2 0
Sale of Floras	...	0 11 0	Subscription—"English Naturalist" Year 1926	...	0 15 0
Balance from Excursions	...	19 4 7	Grant to Junior Section	...	2 0 0
			Donation to "Irish Naturalist" for 1924-25	...	2 0 0
			Addressing Circulars, etc.	...	10 10 0
			Incidental Expenses:—Rubber Stamp for D. J. Carpenter, Lettering Books and Labels, Engraving Medals and Club Prize for best photographs	...	
			Expenses of Conversazione	...	2 5 0
			Gratuities	...	4 16 3
			Advertising of Conversazione	...	1 10 0
			Balance carried forward to next Account	...	0 19 5
			In addition to this balance there remains an unexpended sum of 10 4½ in hands of Mr. George for postage account.	...	64 18 2
		£189 1 8			
					£189 1 8

Audited and found correct. Balance in hands of Honorary Treasurer, Sixty-four Pounds Eighteen Shillings and Twopence.

15th April, 1926.

ALEX. H. DAVISON, *Hon. Treasurer.*
 CHAS. E. KERR | *Hon. Auditors.*
 W. M. CRAWFORD |

Mr. S. A. Bennett, B.A., B.Sc., and Mr. Thomas Edens Osborne, F.R.S.A.I., were elected Honorary Members, and such of the applicants for admission to ordinary membership as had been recommended by the Committee were elected.

The following office-bearers were elected for Session 1926-27:—President, Mr. W. M. Crawford, B.A., F.E.S., F.Z.S.; Vice-President, Mr. R. S. Lepper, M.A., LL.M., F.R.Hist.S.; Honorary Secretaries, Messrs. R. J. Welch, M.Sc., M.R.I.A., and Alex. H. Davison, F.R.S.A.I.; Honorary Treasurer, Mr. Alex. H. Davison, F.R.S.A.I.; Honorary Librarian, Rev. W. R. Megaw, B.A.; Honorary Recording Secretary, Mr. J. A. Sidney Stendall, M.R.I.A., M.B.O.U.; Honorary Secretaries of Botanical Section, Miss W. J. Sayers, B.A., and Capt. Chase, M.C., M.A.; Honorary Secretary of Geological Section, Mr. McI. Cleland; Honorary Secretary of Zoological Section, Mr. James Orr, M.B.O.U.; Honorary Secretary of Archæological Section, Mr. A. Albert Campbell, F.R.S.A.I.; Honorary Secretary of Junior Section, Mr. D. J. Carpenter, A.R.C.Sc.L. The following were elected to fill vacancies on the Committee:—Messrs. S. A. Bennett, B.A., B.Sc., E. Norman Carrothers, Thomas M. Deans, LL.D., and Joseph Skillen.

REPORT OF THE REPRESENTATIVE OF THE CLUB TO THE CONFERENCE OF DELEGATES OF CORRESPONDING SOCIETIES OF THE BRITISH ASSOCIATION, AT SOUTHAMPTON, 1925.

The address to the representatives of the Corresponding Societies was given by Sir Daniel Hall, K.C.B., LL.D., F.R.S., on the 27th August, 1925, at 2-0 p.m.

The lecturer stated that a large amount of devoted work had been done in this country in Natural History, and that it was becoming increasingly difficult for non-professional men to establish themselves in the fields of Botany and Zoology. In Archæology also the main lines had been explored, and though much patient observation remained to be done, the opportunities for men with a taste for personal investigation were becoming more limited.

He thought that much valuable work of a local character could be done in recovering, before too late, the detailed agricultural history of the country, with a view to rendering it available for the purposes of education.

There is a general feeling that the country schools ought to do something to use their environment in their education, and not base it exclusively upon urban needs and the urban outlook. The lecturer thought it a matter of importance that boys in a rural school should arrive at some appreciation of the fact that our landed system and our farming is a matter of growth which has its roots far back in the past, and represents an ordered development in response to the physical and economic environment.

He would like to see, on the walls of every country school, a series of parish maps which would include:—

(1st.) The normal *cadastral map*, the Ordnance Survey on the 1in. or 6in. scale, on which antiquities are specially indicated.

(2nd.) A *geological map*, preferably the Drift Edition, with manuscript indications of the variations of the soil as far as they are correlated with the geological indications of the map. In certain areas the local agricultural college would be able to supply a deal of information about the characters of the soil of the parish, but as yet there had been no systematic soil survey all over the kingdom.

(3rd.) A *vegetation map*, which would naturally be closely connected with the geological or soil map. It should indicate the prevalence of woodland, marsh or pasture, the characteristic weeds of arable land, the special features of the flora of the wild land, and the types of grasses characteristic of the pastures.

In some parishes where the soil was uniform this map necessarily would be very simple.

(4th.) Alongside the vegetation map should be one showing the actual cropping followed in the parish in any particular year, the fields being coloured on a system, and the crops being ascertained by actual inquiry.

(5th.) A map or maps that would bring out the original settlement of the land, the manors, and the system of cultivation adopted before enclosure, and the date and method of enclosure.

The lecturer wished particularly to stress this last item upon the delegates of the Corresponding Societies.

In all these things the schoolmaster would need the help of the Societies, and on the point of the early agricultural history of the parishes assistance would be most

needed, not merely in the interests of the school, but so as to preserve information which might easily be lost.

Of late years many large estates have been sold and broken up. This is the opportunity for those interested in the past history of a parish to appeal to the stewards of manors, family solicitors, etc., for information as to records and estate maps which may throw light on the enclosure and early history of the land. Societies can do this type of work more effectively than individuals, for a request from one of them would carry more weight than from a private individual, being a guarantee that the inquiry is made for some general purpose and not out of idle curiosity.

The lecturer finally made a plea for the preservation of the older farming implements which are fast disappearing, such as the old four-wheeled wagon.

D. J. CARPENTER.

CLUB MEDALLISTS.

1923. MR. WILLIAM SWANSTON, F.G.S.

1924. MR. NEVIN HARKNESS FOSTER, F.L.S.,
M.R.I.A., M.B.O.U.

1925. MR. NATHANIEL CARROTHERS, who joined the Club in 1892, thirty-three years ago. He was elected to the Committee in 1906, nearly 20 years ago, and he has been a Member of Committee almost continuously ever since.

His work has been chiefly in connexion with the Botanical Section, of which he was several times Honorary Secretary, and to which he has contributed many Papers and Notes.

He was one of the sub-committee of the Club responsible for the production of the Second Supplement to the Flora of N.E. Ireland, and gave very valuable assistance to his colleagues in its compilation.

In Botanical circles his decision on any doubtful matter is regarded as final.

It would be difficult to over-estimate the importance of his work as a helper of beginners in the study of Botany. His readiness to place his profound knowledge and wide experience at the service of anyone in need of them, has gained for him the respect and affection of every Member of the Club.

PROCEEDINGS
and ANNUAL REPORT
OF THE
BELFAST NATURALISTS'
FIELD CLUB

For the Year Ending 31st March, 1927
(SIXTY-FOURTH YEAR)

SERIES II.
VOLUME VIII.



PART IX.
1926-27.

EDITORS:

W. M. CRAWFORD, B.A., F.E.S., F.Z.S.

J. A. S. STENDALL, M.R.I.A., M.B.O.U.

Belfast Naturalists' Field Club.

SIXTY-FOURTH YEAR, 1926-27.

GENERAL COMMITTEE.

President:

W. M. CRAWFORD, B.A., F.E.S., F.Z.S.

Vice-President:

R. S. LEPPER, M.A., F.R.HIST.S.

Hon. Treasurer:

ALEX. H. DAVISON, F.R.S.A.I., 32 Wellington Place, Belfast.

Hon. Librarian:

Rev. W. R. MEGAW, B.A., The Manse, Rosetta, Belfast.

Hon. Recording Secretary:

J. A. SIDNEY STENDALL, M.R.I.A., M.B.O.U., The Museum,
College Square North, Belfast.

Hon. Secretaries of Botanical Section:

Miss W. J. SAYERS, B.A., Bartragh, Knock, Belfast, and
Captain C. D. CHASE, M.C., M.A., Campbell College, Belfast.

Hon. Secretary of Geological Section:

A. McI. CLELAND, 28 Green Road, Knock, Belfast.

Hon. Secretary of Zoological Section:

JAMES ORR, M.B.O.U., 17 Garfield Street.

Hon. Secretary of Archæological Section:

A. ALBERT CAMPBELL, F.R.S.A.I., Drumnaferrie, Rosetta Park,
Belfast.

Hon. Secretary of Junior Section:

D. J. CARPENTER, A.R.C.SC.L., 278 Cliftonville Road, Belfast.

Ordinary Members of Committee:

Retire 1927.

N. CARROTHERS.

ROBERT BELL.

J. R. H. GREEVES,

B.SC.

Retire 1928.

T. EDENS OSBORNE,

F.R.S.A.I.

CHARLES E. KERR,

B.A., F.R.S.A.I.

T. M. DEANS, LL.D.

Retire 1929.

S. A. BENNETT,

B.A., B.SC.

E. N. CARROTHERS.

JOSEPH SKILLEN.

Hon. Secretaries:

A. H. DAVISON, F.R.S.A.I., 32 Wellington Place, Belfast.

R. J. WELCH, M.SC., M.R.I.A., 49 Lonsdale Street, Belfast.



PROCEEDINGS.

SUMMER SESSION.

RIVER MOUTH AT ANTRIM, LOUGH NEAGH SHORE AND THE BUSH.

29th May, 1926. Conductor—R. J. Welch, M.Sc., M.R.I.A.
Number present, 100.

Senior and Junior members, with friends, left Belfast on the 1-20 p.m. train for Antrim, travelling in specially reserved saloon carriages on the L.M.S. Railway. On arrival they were joined by other members who had made the journey by motor, and at once visited the Pollan fishing station on the Lough Neagh shore. Dredging operations were undertaken by many in the mouth of the Sixmilewater, the finds including *Spharium lacustre* and other freshwater mollusks, beetles, isopods, etc., together with quantities of the so-called Freshwater Shrimp, *Gammarus*. Mr. D. J. Carpenter afterwards gave an interesting talk on the catch. Other members during this period either made a detailed examination of the Pollan fishing station, or collected botanical specimens, which were named and described by the botanists of the party.

Following, the members visited The Bush, residence of Mr. H. D. M. Barton, where the rock garden, famous for its variety of Primulas, was much admired. Mr. Barton acted as conductor and pointed out the many species—one even from Tibet—also Wood Lilies of Canada, and Patagonian ferns. By kind invitation of Mr. Barton all present partook of tea, after which the usual business meeting was held (the President, Mr. W. M. Crawford, presiding), when a hearty vote of thanks was accorded to the host. Afterwards the Round Tower was viewed, followed by a visit to the "Witches Stone," a massive holed-stone, by kind permission of Major Clarke, in whose garden it stands. The return journey was made by the 7-56 p.m. train.

DROMENA CASHEL AND TOLLYMORE PARK.

12th June, 1926. Conductors—Colonel R. G. Berry, M.R.I.A.,
and Joseph Skillen. Number present, 59.

The party met at the County Down Railway Station and proceeded to Newcastle, arriving at 10-20 a.m. Motor buses,

provided by the Railway Company, were in waiting and conveyed the members to two of the beauty spots within the ancient territory of the Kingdom of Mourne. Standing on the terrace at Donard Lodge the members could see how the "Mountains of Mourne sweep down to the sea," and the grand semi-circular sweep of the beautiful Bay of Dundrum, with its prehistoric sandhills, dominated by the Knight Templar Castle of Dundrum. Next, the beautiful glen at Tollymore Park was visited, and here several of the botanists elected to remain. Before leaving, the members assembled at the spacious residence of the Earl of Roden, who kindly exhibited the buff leather coat worn by King William III. when he was wounded crossing the Boyne, and gave full details as to its history. The party then proceeded to Dromena, where lunch was taken.

The nature and extent of the excavations carried out by the Belfast Natural History and Philosophical Society were fully explained by Colonel Berry, who dwelt on the unusual shape and non-defensive nature of the souterrain, suggesting that the reason for its peculiar cruciform shape might be found in certain religious rites which were practised in pagan Ireland—these were briefly explained.

Nearby passes the ancient highway known as the "Rough Road," which connected Downpatrick with Newry, and beyond Fedom joined the main road connecting Tara with Emania. The run of the road in the locality was pointed out.

The cashel at Dromena is one of a group—said to have been originally forty-eight in number, forty-two of which the conductor claimed to have located and marked on the Ordnance map. Certain correspondences with the ancient Greek polis were pointed out, and the possible influence, carried by the spread of culture, of various classical religions on the religion of pagan Ireland was discussed.

THE FLUSH.

22nd June, 1926. Conductors—Robert Bell and
J. A. S. Stendall, M.R.I.A., M.B.O.U.
Number present, 70

This was an evening excursion, a start being made from the centre of the city at 6-30 p.m. A special tramcar took the party to Ligoniel, from which place Wolf Hill was ascended on foot, and the journey continued in a like manner along pretty lanes to the Flush River. Along its banks the botanists found much to interest them, the best plant of the evening being the Moon Fern (*Botrychium lunaria*). The

many Junior members present were persistent in their searching and were rewarded by finding a handsome specimen of the only native reptile—Common Lizard (*Lacerta vivipara*), which was carried away in triumph to enrich a school vivarium. Cocoons of the Emperor Moth were found on the heather in some numbers.

Bird-life was disappointing owing to the late date, but a nest of young Snipe provided a theme for an impromptu talk, as did the Curlews which nest here in some numbers.

The journey home was made by the Hightown road to Ballysillan, where tramcars were again boarded.

LOWER LOUGH ERNE.

10th-13th July, 1926. Conductor—R. J. Welch, M.Sc., M.R.I.A.
Number present, 35.

On Saturday, 10th July, the annual long excursion commenced, twenty-five members and friends travelling by 9-40 a.m. train to Enniskillen and from thence by motor to the headquarters at the Lough Erne Hotel, Rossclare Point, where about ten more joined the party, including the President (Mr. W. M. Crawford), who had his motor caravan at Blaney on the south side of the Lough. After lunch the party was taken in Major Irvine's motor launch to the abbey ruins on Davy's (or Davys) Island and the church ruins on White Island. The fine doorway at the latter place has, unfortunately, collapsed within recent years. In 1870, W. F. Wakeman in his guide to Lough Erne drew attention to its ruinous state and the urgent need for the preservation of this rare example of pre-Norman architecture. During the inspection of the ruin, some of the party dredged near Castle Archdall pier, taking in quantity *Paludestrina jenkinsi* Smith. This species, named after A. J. Jenkins, who found it at Plumstead on the Thames in 1889, spread very rapidly along estuaries and rivers in England and the south of Scotland, reaching Ireland about 1893 in the brackish pools at the mouth of the River Bann. It was also dredged on Monday at Ely Lodge and in Devenish Channel.

On Monday morning the party visited the Round Tower, Church, and Abbey on Devenish Island. After lunch Ely Lodge woods and Carrickreagh were visited, and later Innismacsaint Abbey and Cross. These trips were made by motor launch. At a business meeting held at the hotel in the evening, the Vice-President (Mr. R. S. Lepper) in the chair, a new Junior member was elected, and votes of

thanks passed to Major Irvine and his son for their great assistance on the lough trips, to the Marquis of Ely and Colonel Archdall for permission to visit their demesnes, and to Miss Boyd, the manageress of the hotel for her attention to the comfort of all.

On Tuesday morning the party left by motor launch for Castle Archdall to visit the woods, returning in the afternoon to Enniskillen, and travelling by the 5-7 p.m. train to Belfast.

The more noteworthy plants observed by the botanists were *Monotropa hypopitys* at Carrickreagh, *Pyrola secunda* at Carricknagower Lough, *Equisetum trachyodon* at Bunna-hone Lough, and *Ophrys apifera* (in abundance) at Ely Lodge.

The conchologists collected *Succinea oblonga* at Ely Lodge and Carrickreagh, *Zonitoides nitidus* at Rosslare, and *Hygromia fusca* at Castle Archdall.

Six species of the larger fungi not previously recorded from County Fermanagh were noted.

LOUGH FEA.

24th July, 1926. Conductors—Thomas Greer, J.P. (Stewartstown) and George Barnett (Sixtowns). Number present, 29.

The party left Belfast by G.N. Railway at 10-45 a.m., in charge of Mr. A. A. Campbell, for Cookstown, and from thence journeyed to Lough Fea in motors, a distance of six miles. Here the President (Mr. W. M. Crawford) and the conductors for the day joined and field work began.

Lough Fea, a moraine lake of exceptional beauty, nestling in the shadow of Slieve Gallion (1,735 ft.), with the foothills of the Sperrin range fringing the farther shore, looked its best. The finds were chiefly botanical, and included Cranberry (*Vaccinium oxycoccus*), Round-leaved Sundew (*Drosera rotundifolia*), Golden Rod (*Solidago Virga-aurea*), Bog Myrtle (*Myrica gale*), and Bog Asphodel (*Narthecium ossifragum*). The woods surrounding Colonel Poe's shooting lodge were visited and greatly admired.

At 4-45 p.m. the party returned to Cookstown, where tea was served. At the business meeting following, the Vice-President (Mr. R. S. Lepper) in the chair, votes of condolence were accorded the relatives of the late Sir Charles Brett and D. C. Campbell, two old members of the Club.

Mr. Robert Bell and a small party afterwards visited the Carboniferous Limestone quarries near Cookstown railway station, procuring several fossils and noting a large erratic of Slieve Gallion granite. Members then motored to Dunganon, where they entrained at 8-57 p.m. for home.

BROWN'S BAY, ISLANDMAGEE.

7th August, 1926. Conductors—Messrs. Robert Bell and R. J. Welch, M.Sc., M.R.I.A. Number present, 53.

Members met at 2-5 p.m. at York Road Station and proceeded to Larne Harbour and ferried across to Islandmagee. On arrival at Brown's Bay the conductors pointed out the geological features, and later Mr. Bell gave a short talk on the glaciation of the district. The "Rocking Stone," an erratic bearing a close resemblance to Fair Head dolerite, was visited. A small section of the party inspected the disused iron ore quarry, which exhibits a good section of the ferruginous beds of the Antrim basalts. Most of the members visited the dolmen known as the "Druid's Altar." Among the plants observed were the Scottish Lovage (*Lingusticum scoticum*) and Grass of Parnassus (*Parnassia palustris*). The conchologists collected *Helicella barbara*, and var. *strigata*.

Tea was served in Brown's Bay Café, and the party returned by the 8-20 p.m. train from Larne Harbour.

MOUNTSTEWART, BALLYWALTER PARK, AND PORTAVOGIE.

21st August, 1926. Conductors—George Steven and R. J. Welch, M.Sc., M.R.I.A.
Number present about 180.

The party met at the Old Museum at 9-45 a.m. and proceeded by motor coach and many private cars to Mountstewart, the seat of the Marquess of Londonderry, K.G., where an interesting time was spent inspecting the sunken garden, the Red Hand of Ulster garden, and the Italian garden with its rare plants and tree ferns and the quaint carved stone animals, extinct or mythical.

From here the party moved on to Ballywalter Park, by kind permission of Lady Dunleath. Here lunch was partaken of in brilliant sunshine, many of the members receiving visits from a tame white Rhea. Afterwards Lady Dunleath's open air aviaries, with their many rare and beautiful birds, the rock garden, bird pond and rabbit pens were seen and greatly enjoyed.

At Portavogie Mr. Steven, Chief Inspector of Fisheries for Northern Ireland, showed the party much of interest at the fishing harbour, pointing out nets damaged by dog-fish, and mentioning that a number of young salmon were now being taken in the herring nets, fairly grown specimens evidently just out of some breeding river.

Tea was served at the West End Café and afterwards a business meeting was held, the President (Mr. W. M. Crawford) in the chair. Votes of thanks were passed to Lady Londonderry and Lady Dunleath, a new Junior member was elected and some announcements were made about the conversazione.

The run home was made in brilliant sunshine; altogether a very successful day as regards weather and attendance, as well as for the interesting places and things seen.

BALLINDERRY, PORTMORE AND GAWLEY'S GATE.

4th September, 1926. Conductor—E. N. Carrothers.
Number present, 50.

Members and friends met at the Museum, College Square North, and travelled by motor coach through Lisburn to Upper Ballinderry. On arrival the conductor gave a short account of the history of the district which is so much associated with the life of Bishop Jeremy Taylor. The party then inspected, by kind permission of Rev. J. W. Minchin, the middle church built by Jeremy Taylor shortly before his death in 1667. This church, the only local example of a purely Jacobean structure, has been preserved in a most commendable manner by a restoration (in the best sense of the term) carried out in 1902, under the superintendence of Mr. W. J. Fennell, a former president of the B.N.F.C. Leaving the middle church, the party was conveyed to Lower Ballinderry, where, after a short walk, members arrived at the ruins of the old church beside Portmore Lough. This church was the one in which Jeremy Taylor officiated, and from it the fine oak roof and fittings were removed for the construction of the middle church.

In the marshes adjoining the lough the following plants were seen:—*Ranunculus lingua*, *Cicuta virosa*, *Bidens cernua* var. *radiata*, *B. tripartita*, and *Typha angustifolia*. The agaric *Lepiota rhacodes* was found on the roadside leading to the old church, being the first record of this fungus in County Antrim.

On returning to Lower Ballinderry tea was served in the schoolroom. At 6-30 p.m. the party proceeded by Aghalee to Gawley's Gate, where some time was spent along the shores of Lough Neagh. From Gawley's Gate the return journey was made through the osier district, where basket making is carried on extensively, to Glenavy and by the Hannahstown Road to Belfast.

DOWNPATRICK, INCH ABBEY, BALLYNOE STONE CIRCLE AND STRUELL HOLY WELLS.

18th September, 1926. Conductors—Very Rev. W. P. Carmody and Joseph Skillen. Number present, 68.

The party travelled by the Belfast and County Down Railway, some also by private car, and on reaching Downpatrick were met by the Very Rev. W. P. Carmody, Dean of Down, who, together with Mr. Joseph Skillen, acted as conductor for the day.

The first place to be visited was the Cathedral, where the Dean gave a history of the noble building. Down Cathedral is built on Rath-Cealtair, the site of an ancient town which possessed a monastery in the 5th century. This town in later years was called Dun-na-lath-glas, and was one of the principal towns in Ulster. After the Norman invasion, when John de Courcy had established his position in Ulster, he destroyed the Celtic monastery, and built a great Benedictine Abbey, *circa* 1185. This was destroyed by Edward Bruce in 1316; subsequently rebuilt, and again destroyed in 1538 by Lord Deputy Grey, who, for this and other crimes, was afterwards executed. It was restored in 1790, and its position as Cathedral of Down secured by Act of Parliament. The Round Tower was most unfortunately taken down. Here is the burial place of Saint Patrick, and, according to tradition, of St. Columba and St. Brigid also. The present building represents only the choir of the great abbey. At the restoration the east, north, and south walls, with the celestory, were preserved. The Dean pointed out that the architecture was late Norman, as shown by the pointed arches, and he also called attention to the carvings on the capitals of the columns, to the beautiful east window, and to some monuments of the 17th century.

After the Rt. Hon. Colonel R. H. Wallace, D.L., had given of his lore dealing with Downpatrick and its neighbourhood, the grave of Saint Patrick was visited. A move was then made to the great Dun, where Mr. H. C. Lawlor, M.A., M.R.I.A., gave a short address, pointing out that this was

a typical Norman fort and John de Courcy's stronghold. The motor conveyances were now mounted, and Inch Abbey soon reached. The rector of Inch, Rev. B. Finch White, was in waiting, and from an eminence gave a history of the Abbey from its foundation in 1180 by Cistercian monks from Furness Abbey. Inch is one of John de Courcy's abbeys, and is built on the standard Cistercian plan. The rector took the party over the buildings, pointing out the cloister garth, the refectory, the abbot's house, the site of the dormitories, the kitchen with its great ovens, and the monks' bath house at the side of the river. The preservation of these ruins is due to the Board of Works, whose authority has now been delegated to the Government of Northern Ireland. Their beautifully-kept condition is a cogent argument—if one were needed—in favour of the Northern Government's recent Act for the Preservation of Ancient Monuments.

After an illustration, given by Mr. Joseph Skillen, of the sign language by which the monks used to communicate one with another—for the Cistercians have the vow of silence—the party proceeded to have lunch on the beautifully-kept green-sward surrounding the ruined buildings. Following, a visit was paid to Struell Holy Wells, which were once famous for pilgrimages, now ceased for almost a century, except on the eve of St. John's day, when they are visited by thousands. A similar occurrence has taken place in connexion with the pilgrimages to the shrine of St. Thaddeus on Church Island, Lough Beg, which, having been discontinued for many years, have been recently revived. Struell Holy Wells are stone roofed, showing their great antiquity. The most interesting one is Tubbernascol—the Well of the Eyes—it being of beehive shape with a domed stone roof. Leaving this interesting spot, the last call was at Ballynoe Stone Circle, which was undoubtedly a spot revered by a much earlier religion and a much earlier people. This is one of the finest stone circles in Ireland, and what celebrations it may have witnessed the most vivid imagination cannot picture.

Time called and a move was made for Downpatrick, where tea was provided by Mr. and Mrs. Magee, at the hotel. After tea a business meeting was held, presided over by Mr. W. M. Crawford, President of the Club. Mr. D. E. Lowry proposed, and the Rt. Hon. Samuel Cunningham seconded, a vote of thanks to those who had made the excursion such a success, especially to Dean Carmody and the Rev. B. Finch White. Dean Carmody briefly acknowledged the vote.

WINTER SESSION.

The authors of the Papers, of which abstracts are given, are alone responsible for the views expressed therein.

CONVERSAZIONE.

The Winter Session opened with a Conversazione held in the Assembly Hall, Fisherwick Place, on Tuesday, 19th October, 1926, at which there was a very large attendance of members and friends. Tea was served from 7 to 8 p.m.

The Exhibits included:—

BOTANY.—S. A. Bennett, rare Ulster grasses; E. N. Carrothers and A. E. Muskett, living specimens of local fungi; C. D. Chase, some plants from Hohe Tatra, rare or not found in the British Isles; E. J. Merrell, sobole of Couch Grass and corm of Bulbous Buttercup; Shaftesbury House Students, collection of fruits; Miss Mawdsley, plants collected in Gloucestershire by Mary Emery, 1830-1850; D. J. Carpenter, South African immortelles; Rev. W. R. Megaw, British and foreign mosses; Linen Research Institute, per Miss A. G. Davin, model seed-dressing machine for flax (working), samples of straw and pressed flax flowers illustrating hybridisation, photographs of stages in life of flax plant:—per C. R. Nodder, Batile dyeing on linen; Prof. S. P. Mercer, exhibit illustrating seed problems.

GEOLOGY.—A. McL. Cleland, lignite from Wealden beds, Swanage, Dorset, fossil wood, Purbeck beds, Lulworth Cove, Dorset, and Lough Neagh, and indurated Liassic shale, Portrush; Robert Bell, Upper Cretaceous fish remains from Antrim and Derry, and orbicular granite from Mullaghderg, West Donegal; A. H. Davison, fossils and their modern representatives; D. J. Carpenter, minerals; R. J. Welch, Holocene freshwater shells from marl and Portrush raised-beach shell deposit.

ZOOLOGY.—The President showed a case of South American butterflies, with some Indian specimens showing close similarities, and also a pair of Peregrine Falcons from County Derry; The Public Museum, large collection of land and freshwater shells and cases of models of various insects; E. J. Merrell, pond life; A. Deane, case illustrating an introduction to the study of geology, botany and zoology, specially intended for juniors; S. A. Bennett, sloughs of Grass Snake and Viper; J. Orr, wasps' nests; J. A. S. Stendall, Black-tailed Godwit from County Wexford, obtained in July, and Guillemots' eggs illustrating form and variation in colour;

A. McI. Cleland, cowries and other shells, sea-urchins from Bundoran, and home of the Rock Bee; A. H. Davison, tropical marine shells; R. J. Welch, genus *Limnaea* (fresh-water shells).

ARCHÆOLOGY.—A. Pringle, bronze sword, three saddle querns and mortised timber from a Tyrone crannog; Mrs. A. McI. Cleland, stone and flint implements; Robert Bell, English palæolithic implements and local rostrocarinates.

MISCELLANEOUS.—Miss Mawdsley, old-style watch keys and seals, and an old-fashioned doll.

JUNIOR SECTION.—The exhibits staged by Junior members were especially interesting, being in the main of living objects. Those who exhibited were the Misses Agatha Crawford, Alice, Ethne, Joan and Margery Glendinning, Nora Fisher and Norah Neill, and the Masters A. and R. MacDonald.

At 9-10 p.m. a business meeting was held, the President (Mr. W. M. Crawford) welcoming the large company present. He referred to the well attended excursions that had been held during the summer and hoped that members would be equally enthusiastic during the winter session.

Mr. S. A. Bennett was then called upon to propose a resolution—"That Mr. Robert Bell is a fit and proper person to receive the Club's Medal." This was put to the meeting and passed with acclamation, after which the President presented the Medal to Mr. Bell, who suitably replied.

The President handed the Club's prize to Mr. Thompson M'Cloy for "The best collection of Local Natural History Rhymes," and afterwards spoke regarding the excellent progress being made by the members of the Junior Section, and presented prizes to Junior members as follows:—

Mr. Carpenter's prize, for "Best Collection of Land and Freshwater Mollusca," to Miss Agatha Crawford.

1st Special prize for same, to Master Ranald MacDonald.

2nd Special prize for same, to Miss Joan Glendinning.

Mr. Cleland's prize, for "Best Collection of Local Fossils," to Master Angus MacDonald.

Special prize for same, to Miss Ethne Glendinning.

Mr. Welch's prize, for "Best Collection of Marine Shells," to Miss Nora Fisher.

Special prize for same, to Miss Agatha Crawford.

Prizes to Junior members for *Conversazione* exhibits were awarded to the Misses Joan Loewenthal, Agatha Crawford, Lois McKeown and Norah Neill, and Master Angus MacDonald.

The Rev. Canon Foster, B.D., was unanimously elected an Honorary Member and a number of Senior and Junior members were added to the Roll.

Subsequently there was a lantern display of scenes taken on the summer excursions. These were shown by Mr. A. R. Hogg and described by Mr. J. A. S. Stendall.

INSECT MIMICRY.

The first ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday, November 16th, 1926, when Mr. W. M. Crawford, B.A., F.E.S., F.Z.S., gave his presidential address to a large audience of members and visitors, illustrating his remarks with a fine series of slides, both coloured and plain, of butterflies, moths, stick and leaf-insects, etc.

The President, in his address, said:—"While mimicry is widespread in the animal kingdom, I am restricting the scope of this paper to mimicry among insects, chiefly butterflies and moths. It must be clearly understood that when we talk of mimicry in insects we must exclude all idea of conscious imitation. Mimicry is rather the result of natural selection, or survival of the fittest, acting through hereditary variations.

"Aggressive resemblance or concealment for attack is not common among insects, so I pass to the next division—protective resemblance or concealment for defence. This kind is very common. We get many examples of insects looking like bark, sticks, or leaves, so as to render themselves inconspicuous to their enemies. Stick caterpillars are very numerous, though not often noticed, owing to the excellence of their deception. The buff-tip moth, when at rest, also has the appearance of a dead stick.

"In the case of insects resembling leaves, the leaf insect of India and Ceylon is a remarkable imitation of green leaves. Among those resembling dead leaves when their wings are folded, the Indian leaf butterfly is one of the best, while there are many other butterflies carrying out the same idea, some of them only in the dry season form. Many other butterflies and moths at rest make themselves inconspicuous in their surroundings by colouration blending with those surroundings.

“Mimetic resemblance, or mimicry proper, is mostly found among exotic butterflies and moths. In Batesian mimicry, abundant, conspicuous and unpalatable butterflies are mimicked by others of widely-separated groups, the mimics gaining protection from their enemies by their resemblance to the unpalatable kinds.

“In Mullerian mimicry, models and mimics are both unpalatable, but the latter benefit from their likeness to the models by lessening the loss entailed by the education of new generations of birds and other enemies in that they have only one warning pattern to learn and not two.”

After the address the President requested his audience to put any questions they wished, and answered those put by Messrs. Carpenter, Stendall, and Welch, who had spoken on various points of the address.

Before the address a vote of condolence was passed with a member of the Committee, Mr. C. E. Kerr, B.A., whose wife had lately died.

LANDS AND SEAS OF THE WORLD IN PAST TIMES.

The second ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday, December 14th, when Professor J. K. Charlesworth, D.Sc., gave a lecture on above subject. The President (Mr. W. M. Crawford) occupied the chair. Professor Charlesworth said—

“The shore lines of the seas of the world are not unchangeable. They have shifted within historic times and to a greater extent within the relatively brief period of Man’s life upon the planet. Thus to cite but a few important cases Man has witnessed the severance of Asia from N. America in the region of the Behring Straits, the separation of Tasmania from Australia, of Africa from Europe and of Britain from the continent of Europe. The further back into geological times we peer the more are the shore lines of the world’s seas seen to differ from those of the present day.

“An examination of the rocks of the world shows that physical and climatic conditions quite different from those obtaining in the various regions to-day have existed in the past. Marine sediments, containing typical marine fossils, occur even in the heart of our continents. By mapping the distribution of these marine sediments some idea of the extent of the old seas may be obtained. Moreover, by noting the increasing coarseness of the sediments in certain definite

directions, from pure ooze through fine muds to sands and even to shingle, the position of the land masses of the time may be ascertained. This evidence is confirmed by the related change of the marine fauna in the same direction, from pelagic forms into a true littoral or shore fauna, and by the frequent discovery of the materials which accumulated on the continents themselves, with their associated mammalian or molluskan land fauna.

“ World-maps representing the distribution of the lands and seas of the world at successive periods in the geological past, constructed by this means but supplemented by much other information gleaned in other ways, are in constant use by geologists to-day. These show the evolution of the oceans and the continents from early times, when the face of the planet wore a strangely unfamiliar look, to the well-known outlines of the present day. It is very probable that the oceans have not only changed their shape but also their extent and depth, these becoming deeper and deeper with the increasing age of the earth.

“ Some of these changes are doubtless to be ascribed to such surface forces as the stripping of the continents of their rocks and the piling up of their waste upon the floor of the seas, the deposition of the sediments causing a slow but persistent rise of the waters of the ocean and a steady submergence of the marginal parts of the continents. This tendency, which manifestly in a relatively short period would cause the complete inundation of all the lands of the world and produce a universal ocean—such as can readily be proved has at no time obtained since the origin of a land fauna—is counteracted by an equally strong force which causes the lands to be rhythmically uplifted, probably in part at least, on account of the relief of the crust beneath the continents in consequence of the removal of the surface rocks and their transport to the sea. The narrow seas themselves, with their great weight and thickness of sediment, amounting sometimes to as much as forty thousand feet thickness, have served as the cradles of the future mountain ranges. The extensive transgressions of the waters of the seas over the margins of the continents, and the equally great regressions or withdrawals of the waters into the ocean basins which have in all cases succeeded the transgressions, are rhythmic in nature. The exact cause of the rhythm is unknown.”

Following, several members asked questions which were fully dealt with by the lecturer.

FISHERY PROBLEMS, LOUGH NEAGH AND COUNTY DOWN COAST.

There was a full attendance at the third ordinary meeting, held in the Museum, College Square North, on Tuesday, January 11th, 1927, when Mr. George Steven (Chief Inspector of Fisheries, N.I.) delivered a lecture on the above subject. The President (Mr. W. M. Crawford) occupied the chair. Mr. Steven said that around the coast of Northern Ireland were to be found some of the finest fishing banks in British home waters; new ones were constantly being discovered. The latest was found during the war, formed on a pinnacle covered by small shells and an abundance of the food on which fish live. With the building of large boats they naturally found that more fish were being caught, and an outlet had to be found for them. Thus arose the pickling of herrings industry, which was very important to the prosperity of the province.

The herring industry at Ardglass was an ancient one, but in our time it might be counted at its best from the year 1909. Last year all available space on shore at Ardglass was invaded by curers, with the result that 5,000 tons of pickled herrings were exported. The value of the catch during the twelve weeks the fishing lasted amounted to £60,000. The export value of pickled herring from Northern Ireland as a whole would be nearly £100,000. The importance of the Ardglass herring might be understood from the fact that on the continent and in America it was considered of much higher quality than the Scottish herring.

At Toomebridge there was the most important Eel-fishing in Europe. The export of Eels from Northern Ireland would give a cash return of about £20,000 per annum, but the stock was being depleted owing to the capture of yellow eels for bait. The export of Salmon from Northern Ireland only amounted to 360 tons per annum.

In conclusion, the lecturer urged people to eat more fish, saying that fish was a very healthy food; they lived under healthy conditions and were the cleanest and most easily washed food.

An interesting discussion followed, in which the President, Captain Turner and Messrs. A. H. Davison, R. S. Lepper, B. Murray, J. A. S. Stendall and R. J. Welch took part.

A BOTANICAL RUN ROUND ULSTER.

The fourth ordinary meeting was held in the Museum, College Square North, on Tuesday, 15th February, when

Professor James Small, D.Sc., M.R.I.A., gave a racy discourse to a large audience. The Vice-President (Mr. R. S. Lepper) occupied the chair.

The lecturer dealt briefly with the zonation of red, brown and green sea-weeds which form a series of belts around the coast from beyond low tide to just below high tide level, pointing out the interest of form and beauty among the plant forms to be found in the rock-pools. The building of sand-dunes, as at Newcastle, and of salt-marshes, as at Comber and Carnalea, was explained, together with the stages in breaking down of both these vegetation groups, which are important in that they win land from the sea and estuaries.

Some hedgerow, river and woodland groups of plants were indicated. The vegetation of Divis Mountain was described, and the lecturer mentioned that a special study of Divis had been made from the Department of Botany, Queen's University. Interesting details of its history can be made out from the pollen grains of former plants which are still found preserved in the peat, and which indicate that Divis has had successively alder, birch, and other woodlands upon its now heather-clad slopes.

The lecturer stressed the point that there are still many opportunities for valuable work by the amateur botanist in Ulster, not so much in finding rare plants or in getting new records as in careful mapping and studying the vegetation of selected areas.

The Chairman and D. J. Carpenter spoke complimenting the lecturer, who answered questions put by Miss Sayers, Captain Chase, and J. A. S. Stendall.

Before the lecture a vote of condolence was passed with the family of the late Nevin H. Foster, F.L.S., M.R.I.A., M.B.O.U., who had filled many offices of the Club during a membership of over a quarter of a century.

EARLY CHRISTIAN ANTIQUITIES IN IRELAND.

At the fifth meeting of the Winter Session, held in the Museum, College Square N., on Tuesday, March 1st, Mr. R. J. Welch, M.Sc., M.R.I.A., gave a lecture, illustrated with lantern slides, on "Early Christian Antiquities in Ireland." The President (Mr. W. M. Crawford) occupied the chair.

Taking first the holy wells as survivals from pagan into Christian times, the lecturer passed on to the early churches

and oratories still remaining in many places, mainly along the west coast. The Oratory of Gallerus, with its curious doorway, on the Dingle promontary; the early churches of the Aran Islands—Temple Benin and Temple Mac Duagh; stone-roofed churches, such as St. Mac Dara's Oratory, St. Kevin's Kitchen, Glendalough; St. Duileach's, near Dublin; Cormac's Chapel, Cashel, and others were illustrated in detail.

The Celtic monastery of Inishmurry, with its beehive cells, cursing stones altar, and primitive cross, was described, and a number of doorways of various types, such as those with inclined jambs, narrower at top than bottom, very good examples being at Killeavy Old Church west door, County Armagh, and the remnant of a church at St. John's Point, County Down.

The fact that round towers (mainly erected from the ninth till the twelfth centuries) were Christian belfries and places of refuge from the plundering Norsemen, and not pagan buildings, was emphasised. Their history was given and types of their doorways described. These were very narrow and set high—eight to fourteen feet above ground—for the purpose of easy defence.

Various forms of Celtic crosses were shown, from the early slab with its incised cross—like Movilla, Newtownards, or Kilclief—to the tall crosses, such as Arboe, Monasterboice or Clonmacnoise. The curious tau or T cross of Tory Island, of which type there are only about three in Ireland, was also illustrated. Many of the early oratories or monasteries were on islands, either in the larger lakes or on the coast, and the early form of skin-covered boat—coracle or curach, as it is called in Ireland—which was used for crossing to these islands, was shown. They still survive in the very old form on the Boyne for the purpose of salmon fishing.

Several members spoke to the lecture and many questions were asked, all of which were replied to by the lecturer.

ECLIPSES OF THE SUN, MOON AND STARS.

The sixth ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday, March 15th, when Mr. C. E. Kerr, B.A., gave a lecture, illustrated with lantern slides. The chair was occupied by Mr. J. A. S. Stendall (Ex-President).

The lecturer first dealt with the theory of eclipses, and then proceeded to consider their value to the astronomer,

Dealing with solar eclipses, he showed lantern slides of the mysterious corona and the solar prominences. Connected as these are with the sun-spots and the great internal forces in the sun, a digression was made to describe the theory and practice of spectrum analysis necessary to those who wish to understand how we acquire much of our information about the heavenly bodies. Using a special carrier with the continuous spectrum, the bright line spectra of sodium, potassium, and other substances were shown. By means of these bright line spectra and their reversal in the Fraunhofer lines, much was to be learned of the condition of the sun.

The lecturer discussed connexion between sunspots and the characteristic phenomena of eclipses—the corona, the chromosphere, the reversing layer, and the protuberances.

Eclipses of the moon were then dealt with, and similar phenomena in the planets—the eclipses of Jupiter's satellites, the transits of Mercury and Venus, and occultations of bright stars by the moon.

Passing to the stars proper, the lecturer showed that eclipse is not a phenomenon peculiar to the solar system. Dealing with the two types of eclipsing variables, the Algol and the B. Lyrae types, he showed that the former consisted of the mutual alternate eclipse of two stars of somewhat unequal brightness. In the B. Lyrae type, however, they had binary stars of practically equal brightness, the stars being placed very close together and being elongated towards each other by tidal action.

The last type of eclipsing matter dealt with was the vast areas of darkness discovered amongst the brightness of the stars, which had now been pretty definitely proved to be great dark clouds of cosmic dust or other obscuring matter. These are supposed to be the aggregations of matter driven off from the stars by light pressure. They are beginning to form new universes, but are so diffuse yet as not to have generated enough heat by contraction to make them glow with their own light.

So the process goes on from dark to bright nebula to giant red star, gradually getting hotter till it reaches the white-heat stage, and thence going through its course of decay until it reaches the dwarf red stage, before finally becoming a dark star.

Towards such a death our sun is approaching; but millions of years must pass before that occurs, because a million years are but as a day in the history of the life and death of a star.

At the close the Chairman and Messrs. Carpenter, Cleland, and Davison asked some questions, to which the lecturer replied, after which the election of a Junior member took place.

THE LIFE OF THE BEE.

The seventh and final meeting was held in the Museum, College Square N., on Tuesday, April 5th, the President (Mr. W. M. Crawford) in the chair, when the Rev. E. M. Gumley, B.D., delivered an address on "The Life of the Bee," illustrated by lantern slides.

The lecturer dealt with the anatomy of the Bee, stressing in particular the antennæ, mouth organs, and digestive apparatus, showing in the latter case the peculiar contrivance by which the bee can bring up the contents of the chyle-stomach to feed the young, without contaminating the contents of the honey-sac, through which it must pass to reach the mouth. By means of the antennæ it is probable that bees can communicate thoughts to one another, as the ants certainly can. It was pointed out, too, that as part compensation for her surrender of motherhood, the gluten, by means of which the queen fastens her egg in the cell, has been changed in the worker into poison, as the ovipositor has been transformed into a sting, thus giving this class a powerful weapon.

Many pictures of wild bees were shown in their natural colours, and some habits of nesting were described.

Dealing with the Hive Bee (*Apis mellifica*), reasons were given for the belief that bee-keeping is perhaps the oldest industry in the world, excepting that of agriculture. It can be traced back to the very dawn of history. The methods of mediæval times were contrasted with modern to the advantage of the latter, and the occupants and internal economy of a modern hive described.

One of the greatest marvels (and there are many) connected with bee life is the fact that an egg identically the same will produce queen or worker at the will of the community. We are left with the astonishing truth that mere difference in the quality of food supplied to a larva and the size of its cell will produce enormous anatomical and functional changes. An attempt was also made to explain the mystery of the swarm as the result of race-memory surviving from the time far back before the dawn of history, when every worker-bee was a mother-bee, and went forth to meet the drone, a theory supported by an analogy of what is known of ant life.

The lecture concluded with some slides showing the process of wax-formation and comb-building for the various purposes of the hive, and showing also some processes in the art of bee-keeping.

Messrs. Carpenter, Reilly, and Turner asked questions and received answers, the proceedings ending with the election of seven Junior members.

ANNUAL MEETING.

The Annual Meeting was held in the Museum, College Square N., on Tuesday, 26th April, at 8-0 p.m., the President (Mr. W. M. Crawford) in the chair.

The following Reports were presented:—

ANNUAL REPORT.

Your Committee has pleasure in submitting the Sixty-fourth Annual Report as follows:—

During the year 2 Honorary, 1 Corresponding, 44 Ordinary and 35 Junior members have been elected, 33 have resigned and 11 have died, while several names have been removed from the Roll owing to non-payment of subscriptions.

The membership now consists of 2 Corresponding, 8 Honorary, 588 Ordinary, and 105 Junior members, making a total of 703.

Ten Committee Meetings were held during the year, at which the attendances were as follows:—

R. Bell	...	...	10	J. R. H. Greeves	...	1
S. A. Bennett	...	...	3	C. E. Kerr	...	3
A. A. Campbell	...	...	5	R. S. Lepper	...	7
D. J. Carpenter	...	...	9	Rev. W. R. Megaw	...	5
E. N. Carrothers	...	...	5	J. Orr	...	8
N. Carrothers	...	...	8	T. E. Osborne	...	...
Capt. Chase	...	...	7	Miss W. J. Sayers	...	8
A. McL. Cleland	...	...	7	J. Skillen	...	7
W. M. Crawford	...	...	9	J. A. S. Stendall	...	10
A. H. Davison	...	...	9	R. J. Welch	...	10
Dr. T. M. Deans	...	...	5			

The Summer Excursions were exceptionally well attended, and the entire programme was carried out, the places visited being as follows:—

Lough Neagh and Mr. Barton's Rock		
Garden, Antrim (Half-day)	...	29th May, 1926.
Dromena Cashel and Tollymore Park	...	12th June, 1926.
The Flush (Evening Excursion)	...	22nd June, 1926.
Lower Lough Erne	... ..	10th to 13th July, 1926.
Lough Fea	... ..	24th July, 1926.
Brown's Bay (Half-day)	... ..	7th August, 1926.
Mountstewart Italian Garden, Ballywalter		
Park and Portavogie	... ..	21st August, 1926.
Portmore (Half-day)	... ..	4th September, 1926.
Downpatrick and Inch Abbey	... ..	18th September, 1926.

A very well attended *Conversazione* was held on the 19th October in the Large Hall of the Assembly Buildings. Exhibits were exceptionally varied and good, Junior members contributing largely.

During the Winter Session the following lectures were delivered and papers read, abstracts of which will be found in the *Proceedings*:—

1926.

November 16	...	PRESIDENTIAL ADDRESS: "Insect Mimicry."
December 14	...	"Lands and Seas of the World in Past Times," Prof. J. K. Charlesworth, D.Sc., Ph.D., F.G.S., M.R.I.A.

1927.

January 11	...	"Fishery Problems, Lough Neagh and Co. Down Coast," George Steven.
February 15	...	"A Botanical Run Round Ulster," Prof. James Small, D.Sc., M.R.I.A.
March 1	...	"Early Christian Antiquities of Ireland," R. J. Welch, M.Sc., M.R.I.A.
March 5	...	"Eclipses of the Sun, Moon and Stars," C. E. Kerr, B.A., F.R.S.A.I.
April 5	...	"The Life of the Bee," Rev. E. M. Gumley, B.D.

All lectures were well illustrated by lantern slides, and some of them by specimens as well; the attendance of members was very good. Mr. A. R. Hogg again acted as lanternist in his usual satisfactory manner.

The President was appointed delegate to the meeting of the British Association, held at Oxford, and presented his Report at the last meeting of the Session.

In conclusion, your Committee desires to tender thanks to Mr. H. D. M. Barton, of the Bush, Antrim, Colonel and

Mrs. R. G. Berry, and the Rt. Hon. Samuel and Mrs. Cunningham, for hospitality; to the Marchioness of Londonderry and Lady Dunleath, for permission to visit the Mountstewart Italian Garden, and the Bird Aviaries, Ballywalter Park.

Thanks are also due to the Press for publishing reports of excursions and meetings; to the Superintendents of the Railways, and to kindred Societies and Public Institutions who have favoured us with their publications.

W. M. CRAWFORD, *President*.

ALEX. H. DAVISON, } *Hon. Secretaries.*
R. J. WELCH, }

DECEASED MEMBERS.

J. H. Adamson.

J. J. Andrew, L.D.S., R.C.S.(Eng.).

F. J. Bigger, M.A., M.R.I.A.

Charles H. Brett, Kt., LL.D.

Nevin H. Foster, F.L.S., M.R.I.A., M.B.O.U.

(Hon. Member).

James Glover.

Rev. T. Hamilton, P.C., M.A.

Miss K. A. Linaker.

W. J. Robb.

Miss Steele.

W. J. D. Walker, C.B.

HON. LIBRARIAN'S REPORT.

The Library has been but little taken advantage of by members during the year. At its meeting held on 2nd November, 1926, the Committee of the Club passed the following resolution regarding the disposal of the Library, when the Corporation's New Museum should be opened:—

“ 2nd November, 1926.—The question of the disposal of the Club Library was discussed. Mr. Orr proposed, and Mr. Carpenter seconded, that the Libraries, Museums and Art Committee of the Belfast Corporation be allowed to select what books they consider useful for the new Museum's Library, the rest to be disposed of. The set of *The Irish Naturalist* to be held by the Editor for the time being of the *Irish Naturalists' Journal*. The Erratics and Herbarium also to be handed over to the Museum.”

This resolution was ratified at a Committee meeting on 21st February, 1927, subject to its being confirmed at the Annual Meeting.

The usual list of Exchanging Societies will be found on page 500.

W. M. CRAWFORD, for REV. W. R. MEGAW,
Hon. Librarian.

REPORT OF HON. RECORDING SECRETARY.

The year 1926 must, from the naturalist's viewpoint, be regarded as early. On 18th January the Winter Heliotrope (*Petasites fragrans*) was reported in flower at Greenisland. Rev. E. M. Gumley reported a bat on wing at Ballintoy on 26th February, while two days later frogs were spawning in a pond at Ballyward. At Sixtowns Mr. G. Barnett reported Marsh Marigold (*Caltha palustris*) in flower on 7th March, and Wood Anemone (*Anemone nemorosa*) on the 12th. Blackthorn was in bloom on 26th March at Broomhedge, and Hawthorn flowers appeared on 30th April at Belmont, and 2nd May at Bangor.

The following are records of the arrival of spring migrant birds:—

Chiffchaff—27th March, Belfast; 28th March, Killaloo; 2nd April, Hillsborough and Newtownbreda.

Sand Martin—3rd April, Belfast; 5th April, Warrenpoint.

Cuckoo—11th April, Maze; 12th April, Newtownbreda; 28th April, Draperstown; 30th April, Belfast.

Willow Warbler—3rd April, Warrenpoint; 8th April, Jerrettspass; 10th April, Killaloo and Belfast; 11th April, Newtownbreda; 13th April, Hillsborough.

Swallow—31st March, Warrenpoint; 2nd April, Portglenone; 6th April, Jerrettspass; 10th April, Hillsborough; 12th April, Belfast; 16th April, Killaloo.

Corncrake—9th April, Jerrettspass; 17th April, Hillsborough; 18th April, Ballycraig; 24th April, Newtownbreda.

House Martin—6th April, Warrenpoint; 18th April, Belfast; 1st May, Hillsborough; 2nd May, Ballynahinch.

Swift—30th April, Hillsborough; 2nd May, Ballynahinch.

These dates are in the main earlier than in 1925.

At the end of the summer season the following dates of arrivals of autumn migrants and departure of spring migrants have to be recorded.

ARRIVALS.

Fieldfares and Wigeon, both observed at the Waterworks, Antrim Road, Belfast, by Mr. T. M'Cloy, on 10th September.

DEPARTURES (birds last seen).

Sand Martin—23rd October, Knock.

Swallow—18th September, Belfast; 30th September, Draperstown; 1st October, Killyleagh; 17th October, Knockbracken; 23rd October, Glenshesk; 31st October, Ballycastle (when snow was on mountains); 6th November, Newtownbreda (four birds); 7th November, Millisle (two birds).

On 15th September a Yellow Hammer's nest containing young was observed at Garvagh.

Perhaps the most noteworthy record for the year, certainly the most apparent, was the Bottle-nosed Whale (*Hyperoodon rostratus*) which was caught in Belfast Lough, near Whitehouse. It measured 21 feet in length. Thompson recorded a specimen of the same species, from the Lough, in 1845, and there are infrequent subsequent records.

Mr. W. H. Workman reported an albino Swallow (*Hirundo r. rustica*) at Ballycastle (*I.N.J.*, Vol. 1, p. 154). Reports from various parts denote that foxes are becoming much more common in Northern Ireland, especially in County Londonderry. Badgers, too, appear to be more than holding their own, and two breeding places have been reported within the Belfast city boundary.

Several interesting plants have been noted. Mr. R. J. Welch collected an alga (*Rivularia natans*) at Sandy Bay, near Portmore, on 22nd December, which is new to Northern Ireland and probably to the entire country (*I.N.J.*, Vol. 1, p. 204).

Captain C. D. Chase reports *Rumex sanguineus* L. from Clandeboyne Demesne, its third station in Ireland (*I.N.J.*, Vol. 1, p. 97). Moss records from Rev. W. R. Megaw include two species new to Ireland—*Dicranella cerviculata* Schp. var. *pusilla* Schp. from Ballee Bog, Co. Antrim, and *Hypnum polygamum* Schp. var. *minus* from Belmont (found by Capt. C. D. Chase), and Lough Erne shore.

J. A. SIDNEY STENDALL,

Hon. Recording Secretary.

REPORT OF BOTANICAL SECTION.

In this section there are 55 members, an increase of 13 on last year.

There were four sectional excursions in the summer—to Crow Glen on 15th May, Conlig on 26th June, Black Mountain on 15th July, and the Broadwater, between Moira and Aghalee, on 14th August, the average attendance of members being about 20.

At Crow Glen we found *Lathræa squamaria* and *Claytonia sibirica* in the wood at Fernhill, where the latter grows in abundance. Mrs. Cunningham's rock garden at Glencairn proved a source of great interest, and the tea to which she so hospitably entertained us was no less welcome.

At Conlig we found aquatic and other plants, including:—*Sparganium minimum*, *Pyrola media*, *Orchis prætermisssa*, *Veronica scutellata*, and *Antennaria dioica*.

The walk along the Broadwater gave us an opportunity of seeing in bloom:—*Ranunculus lingua*, *Sagittaria sagittifolia*, *Butomus umbellatus*, *Festuca gigantea*, and in fruit, *Acorus calamus*.

On this excursion, as always, we were indebted to Mr. N. Carrothers for his invaluable and unflinching help.

At the general excursion to Lough Neagh and Antrim on May 29 we found in the woods, apparently wild, *Leucojum æstivum*, *Viola palustris*, *Salix triandra*, *Luzula sylvatica*, *Saponaria officinalis* and *Cerastium arvense*. In Mr. Barton's rock garden undreamt of wealth of varied bloom from every part of the world gave us great delight.

W. SAYERS, }
C. D. CHASE, } Joint Hon. Secretaries.

REPORT OF GEOLOGICAL SECTION.

The Section made three excursions during the Session to the following places:—Larne Harbour, Conlig and Portrush. Each excursion was well attended and was favoured with good weather.

At Larne Harbour the Liassic beds, exposed opposite Waterloo House, were carefully examined, where traces of *Ammonites planorbis* and *Ammonites Bucklandi* were found, with plenty of finely developed *Gryphea incurva*.

The heaps of waste material at the old lead mines at Conlig yielded fine specimens of galena and barytes and a particularly good example of phosphate of lead (pyromorphite).

At Portrush attention was paid to the White Rocks and their associated Basalts, it being noted that these rocks showed great marine erosion and illustrated how much more

easily and rapidly the Basalts eroded as compared with the Chalk, resulting in the latter being in many cases left as pinnacles.

At Portrush Harbour the indurated Liassic shales were carefully examined, some fair fragmentary fossils being obtained despite the very hard nature of the formation.

A. McI. CLELAND, *Hon. Secretary.*

REPORT OF ZOOLOGICAL SECTION.

The Section suffers from a paucity of members, which is to be regretted in view of the great scope for useful work in the district.

During the summer session excursions to Waterloo (near Larne), Greenisland, Holywood, Lagan Canal, and Orlock Point, were carried out. Some of these were held in conjunction with other Sections. All were well attended, the Juniors being much in evidence. A good deal of collecting was done, especially at Shaw's Bridge and Orlock Point, where Mr. Welch acted as guide, philosopher and friend, and imparted much useful information to the juvenile members.

Many members of the Club are interested in zoology, but are not yet connected with this Section. It is desirable that they should join to give or receive such help as association offers.

JAMES ORR, *Hon. Secretary.*

REPORT OF ARCHÆOLOGICAL SECTION.

The Archæological Section has now a membership of 60. During the summer of 1926 four excursions were held.

On 15th May Crow Glen souterrain was visited, Mr. Robert Bell acting as Conductor. The Botanical and Junior Sections joined us on this occasion, and the Right Honourable Samuel Cunningham and Mrs. Cunningham hospitably entertained us at Fernhill.

The next excursion, and the largest of the season, was to the Priory Church and Movilla, Newtownards, on 19th June. Mr. David Kennedy kindly joined the party and assisted the Honorary Secretary as joint conductor.

On 17th July the Section examined the site of the pre-historic flint implement factory on the Black Mountain. Mr. Robert Bell, to whom the discovery of the site is due, was conductor.

The last excursion was to Holywood on 30th July, when the Priory Church was visited and its history very fully

discussed. The Moat, an ancient burial mound, was also inspected, by kind permission of Mrs. Rule.

All the excursions were well attended, and the members were keenly interested in the various matters brought to their notice.

A. ALBERT CAMPBELL, *Hon. Secretary.*

REPORT OF JUNIOR SECTION.

At the close of the previous year there were 74 members on the roll, but owing to resignations and transfers to Senior membership we commenced the year with 70 members, increased during the season to 105.

Eight excursions took place during the year. Four of these, namely those to Greenisland, the Lagan, Orlock Point, and Glenburn, Dunmurry, were undertaken by the Juniors alone. The remaining four—to Crow Glen, Antrim, Flush River and Conlig were run conjointly with the Seniors or other sections.

In connexion with these excursions I wish to gratefully acknowledge the kindness of the following for their generous hospitality to the Junior members:—Mr. H. D. M. Barton, The Bush, Antrim; The Rt. Hon. S. Cunningham and Mrs. Cunningham, Glencairn, Belfast; Mr., Mrs. and Miss Fisher, Inishglass, Greenisland, and Capt. and Mrs. Knox, Glenburn, Dunmurry.

I also desire to thank Capt. Chase, Mr. N. Carothers and Mr. J. Orr for help on certain field days, and more especially Mr. R. J. Welch for the interest shown in the section, and his valued help on many occasions.

Finally, I would like to report that the interest kindled in the section during last session has not only been maintained but increased, for during the past two years 71 new members were enrolled and during the past year there was an average attendance of 27 at the excursions. The interest shown in field work has also been very great, and has resulted in many of the Juniors making good collections of shells, fossils, flint implements, etc., while a striking feature of the Annual Conversazione was the number and variety of the exhibits made by the Junior members.

These facts and figures are, I believe, unequalled in the history of the Section, and are ample evidence that the Juniors form one of the keenest and most active sections in the Club.

D. J. CARPENTER, *Hon. Secretary.*

The President made a statement regarding the future of the Club's Library, and read the following resolution of the Committee:—

“ 2nd November, 1926.—‘ The question of disposal of the Club's Library was discussed. Mr. Orr proposed, and Mr. Carpenter seconded, that the Libraries, Museums and Art Committee of the Belfast Corporation be allowed to select what books they consider useful for the new Museum's Library, the rest to be disposed of. The set of *Irish Naturalist* to be held by the Editor, for the time being, of *The Irish Naturalists' Journal*, the Erratics and Herbarium also to be handed over to the Museum.’

“ This resolution was ratified at a Committee meeting on 21st February, 1927, and is subject to confirmation by the Annual Meeting.”

After discussion the meeting unanimously agreed to the Committee's proposal.

The following office-bearers were elected for the Session 1927-28:—President, R. S. Lepper; Vice-President, D. J. Carpenter; Honorary Secretaries, E. N. Carrothers and A. E. Muskett; Honorary Treasurer, Alex. H. Davison; Honorary Librarian, W. M. Crawford; Honorary Recording Secretary, J. A. S. Stendall; Honorary Secretaries of Sections—Botanical, Miss W. J. Sayers and Capt. C. D. Chase; Geological, A. McL. Cleland and Robert Bell; Zoological, James Orr; Archæological, A. A. Campbell; Junior, D. J. Carpenter. Ordinary members of Committee (retire 1928), T. Edens Osborne, Charles E. Kerr, Dr. T. M. Deans; (retire 1929), S. A. Bennett, Joseph Skillen; (retire 1930), Rev. W. R. Megaw, C. R. Nodder, R. J. Welch.

REPORT OF THE CLUB'S DELEGATE TO CONFERENCE OF CORRESPONDING SOCIETIES OF THE BRITISH ASSOCIATION.

I attended the Conference of Delegates of Corresponding Societies in Oxford on Thursday, 5th August, 1926, at 2-15, and on Tuesday, 10th August, at 2 p.m. It was attended by 61 delegates representing 64 societies.

At the first meeting a most interesting and inspiring address was given by the President, Sir John Russell, on Regional Surveys and the benefits that would accrue from their gradual extension by affiliated and other societies, schools, etc. He began by pointing out that a regional survey

must be based on the specialised work of the Geological Survey, and in the few cases where they have been made, the various Natural History Surveys made by professional specialists having the time, the resources and the necessary detachment. He suggested that the best beginning is to construct a model of the region as this shows, in a way no map can do, the features of chief importance in the survey. The records would then be carried on to maps, the 6in. making a good basis for records and the 1in. being often best for displaying the results. Topographical details of the Ordnance Survey maps would be correlated with the data given by the Geological Survey, and in this connexion Sir John Russell mentioned that the Ordnance Survey Department makes special arrangements for supplying scientific societies with maps for purposes of survey work. Then would follow considerations of the reasons for the geological formation of the region, including climatic and temperature data.

The next stage would be to show how this natural material has influenced and has been influenced and utilised by mankind, the region being mapped out into four main divisions—inhabited land (houses and their gardens); arable land, including fruit and market gardens; permanent grass land; and uncultivated land, including woodland, commons, heaths, bogs, etc. These divisions were then discussed in greater detail.

A general discussion followed the President's address.

Other business done was the re-appointment of the Kent's Cavern Committee and the adoption of a resolution, "That steps be taken, with the co-operation of local societies, to make systematic records of temporarily open geological sections, well borings, and the like."

W. M. CRAWFORD.

CLUB MEDALLISTS.

1923—William Swanston, F.G.S.

1924—Nevin Harkness Foster, F.L.S., M.R.I.A.,
M.B.O.U.

1925—Nathaniel Carrothers.

1926—Robert Bell.

Robert Bell was born in Ballycreen, Co. Down, in 1864, and early in life developed a strong interest in natural history and antiquities. In 1893 he was elected a member

of the Belfast Naturalists' Field Club, and soon became associated with Samuel Alexander Stewart, who was his guide and friend, to good purpose.

Mr. Bell was soon found to be a very keen field geologist and antiquarian, quickly becoming an accurate observer, and a great collector. When Dr. Hume, afterwards Director of the Geological Survey of Egypt, made a special survey of the Cretaceous rocks of Antrim and Derry, he found Mr. Bell's collection of Chalk and Greensand fossils of great service for his paper on the subject. Later Mr. Bell rendered good service to the Irish branch of H.M. Geological Survey, and in the *Survey Memoir of the Belfast Area* (1904), he is thanked for his services by the Director, Mr. (afterwards Sir) J. J. H. Teall, F.R.S., F.G.S. For his unique collection of Zeolites from the Basalts of Antrim and Derry, which included a number of minerals new to science, he was elected a life member of the Mineralogical Society of London.

At the conversaziones of the Club for many years past selections from Mr. Bell's private collection—the finest in the north of Ireland—have given pleasure to both members and visitors.



PROCEEDINGS
and ANNUAL REPORT
OF THE
BELFAST NATURALISTS'
FIELD CLUB

For the Year Ending 31st March, 1928
(SIXTY-FIFTH YEAR)

SERIES II.
VOLUME VIII.



PART X.
1927-28.

EDITORS:

W. M. CRAWFORD, B.A., F.E.S., F.Z.S.

J. A. S. STENDALL, M.R.I.A., M.B.O.U.

Belfast Naturalists' Field Club.

SIXTY-FIFTH YEAR, 1927-28.

GENERAL COMMITTEE.

President:

R. S. LEPPER, M.A., F.R.HIST.SOC.

Vice-President:

D. J. CARPENTER, A.R.C.SC.L.

Hon. Treasurer:

ALEX. H. DAVISON, F.R.S.A.I., 32 Wellington Place, Belfast.

Hon. Librarian:

W. M. CRAWFORD, B.A., F.E.S., F.Z.S., Orissa, Marlborough Park South, Belfast.

Hon. Recording Society:

J. A. SIDNEY STENDALL, M.R.I.A., M.B.O.U., The Museum, College Square North, Belfast.

Hon. Secretaries of Botanical Section:

Miss W. J. SAYERS, B.A., Bartragh, Knock, Belfast.
Captain C. D. CHASE, M.C., M.A., Campbell College, Belfast.

Hon. Secretaries of Geological Section:

A. M'L. CLELAND, 28 Green Road, Knock, Belfast.
ROBERT BELL, 64 Newington Avenue, Belfast.

Hon. Secretary of Zoological Section:

JAMES ORR, M.B.O.U., 17 Garfield Street, Belfast.

Hon. Secretary of Archæological Section:

A. ALBERT CAMPBELL, F.R.S.A.I., Drumnaferrie, Rosetta Park, Belfast.

Hon. Secretary of Junior Section:

D. J. CARPENTER, A.R.C.SC.L., 278 Cliftonville Road, Belfast.

Ordinary Members of Committee:

Retire 1928.

T. Edens Osborne,
F.R.S.A.I.
Charles E. Kerr, B.A.,
F.R.S.A.I.
T. M. Deans, LL.D.

Retire 1929.

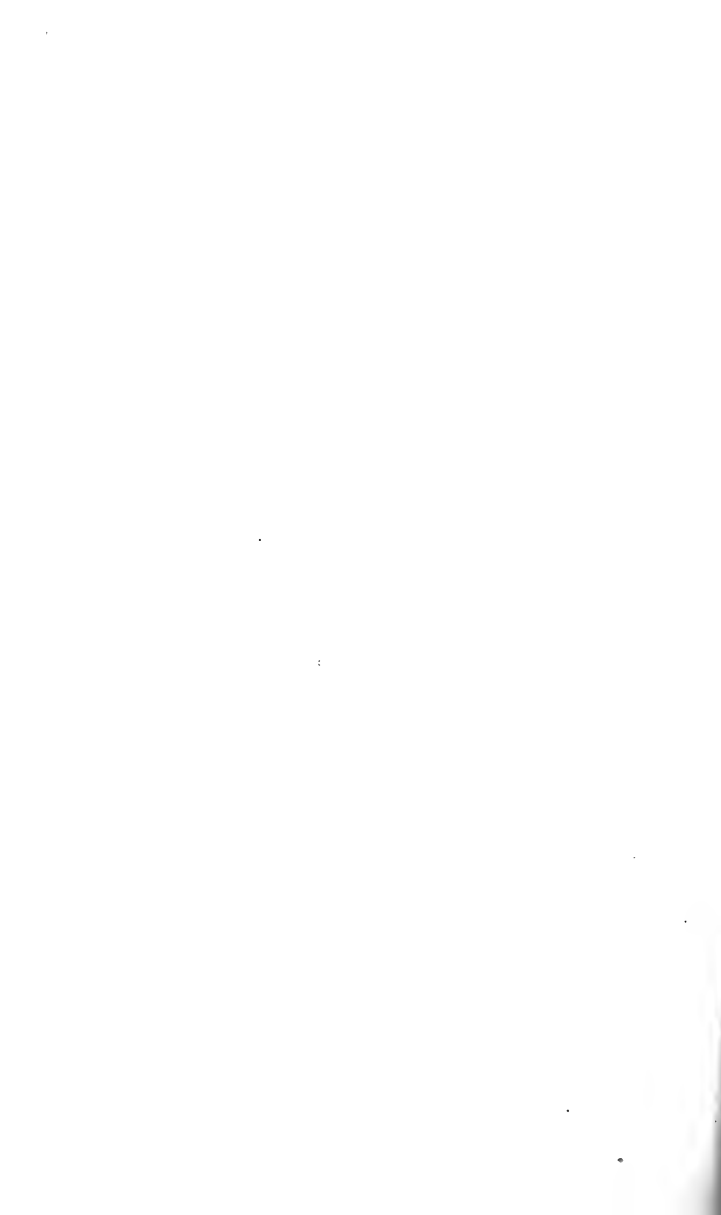
Joseph Skillen.
S. A. Bennett, B.A., B.SC.

Retire 1930.

Rev. W. R. Megaw, B.A.
C. D. Nodder.
R. J. Welch, M.SC.,
M.R.I.A.

Hon. Secretaries:

E. N. CARROTHERS, 145 Stranmillis Road, Belfast.
A. E. MUSKETT, St. Helen's, Old Stranmillis Road, Belfast.



PROCEEDINGS.

SUMMER SESSION.

BELVOIR PARK.

24th May, 1927. Conductors—A. A. Campbell and J. A. S. Stendall.
Number present, 120.

One of the largest parties ever present at a B.N.F.C. excursion assembled at the entrance to Belvoir Park at 6-30 p.m. The route through the demesne led past the lake, on to the Lagan bank, through the wood of massive Beech trees to where the Giant Hogweed (*Heracleum giganteum*) grows in some quantity. Proceeding along the path towards the mound, the botanists found a single flower of the Bird's-nest Orchis (*Neottia nidus-avis*), which was *not* removed. Passing by the mansion house the party entered the old Oak wood, where a short address was given concerning nature reserves, and some interesting specimens were collected. The old graveyard of Breda next claimed attention, and a thorough examination of the many inscriptions was made. Mr. Campbell gave a brief address on the history of Breda. From the graveyard, the more agile members visited "Badger Wood," an almost impenetrable area where the Badger lives in some numbers; several "earths" were seen and examined. Meanwhile other members were collecting in the meadows or along the lake-side. The point from which the start was made was again reached at 9-30 p.m.

SLIEVE CROOB.

4th June, 1927. Conductor—A. M'I. Cleland.
Number present, 40.

The journey to Slieve Croob was by motor coach, the start being made from the Museum, College Square North, at 10-20 a.m. The cars went *via* Ballynahinch, and landed the party on the north-east slope of the mountain at a point some 700 feet above sea-level. The climb was to begin here, but was slightly delayed by a heavy shower. When half-way to the summit a halt was called for lunch, the members

taking what shelter they could from the wind and slight showers. At this point the President (Mr. R. S. Lepper) joined the party, and soon the climb was resumed to the summit. Slieve Croob rises to a height of 1,755 ft., and is the crowning elevation of the group of ancient granitic hills of central Down. The top affords splendid views over practically the whole of County Down. On the summit are the ruins of what was at one time a gigantic cairn, the stones which composed it being now heaped into a number of lesser cairns. The River Lagan rises near by, on the western slopes.

On descending, the vehicles were again boarded, and the drive resumed along the northern and western sides of the mountain, the Lagan being crossed at Massford. On the south-western slopes of Cratlieve a halt was made to visit the fine Legananny dolmen, one of the most remarkable in Ireland. The cap-stone is a symmetrical coffin-shaped slab of granite, 11 feet long, 5 feet wide at the broadest part, and $1\frac{1}{2}$ feet thick, and rests on the points of three slender pillar-like supports. Two very symmetrical stones $6\frac{1}{2}$ feet high carry the heavier end, and a tapered stone 5 feet high the lower end.

The return journey was made through Massford and Dromara to Ballynahinch, where tea was served in Walker's Hotel. At a business meeting following the tea, some Junior Members were elected. Belfast was reached at 7-15 p.m. after a most enjoyable excursion.

RADEMON DEMESNE.

18th June, 1927. Conductor—D. J. Carpenter.

Number present, 70.

By kind permission of Colonel Sharman-Crawford, an afternoon visit was paid to Rademon Demesne, the journey being made by 1-30 p.m. train to Crossgar (County Down Railway). The main interest of the excursion was botanical, and among the numerous specimens found were the Spindle tree (*Euonymus Europæus*), the wild Guelder rose (*Viburnum Opulus*), Tutsan (*Hypericum androsaemum*) and the rare Water Violet (*Hottonia palustris*). Interesting and rare fungi were also found, as well as many varieties of ferns, including the uncommon Ceterach. Fine weather helped to make the afternoon a very pleasant, as well as educative one. The return home was by the 7-30 p.m. train.

CAVEHILL AND COLIN WARD.

28th June, 1927. Conductors—D. J. Carpenter and Robert Bell.
Number present, 40.

Members met at the Bank Buildings, Castle Place, at 6-30 p.m., and proceeded by special tram to Bellevue. Thence they proceeded on foot to the quarry, where Mr. Carpenter gave a talk on the strata to be seen there. Subsequently heavy rain caused the party to return earlier than was anticipated.

CHARLEMONT, MOY AND BENBURB.

2nd July, 1927. Conductor—Joseph Skillen.
Number present, 60.

Members met the conductor at the Great Northern Station and boarded the 9-15 a.m. train for Armagh. At Armagh motor vehicles carried the party to Charlemont, where the site of the historic fort, with only its moat and drawbridge remaining, was visited. After a pleasant walk over the bridge spanning the Blackwater River, which separates the counties of Armagh and Tyrone, the vehicles were again mounted for Benburb. Here, having entered the castle grounds and passing by the modern manor house, the old castle of the O'Neills was reached, and afterwards the beautiful gorge of the Blackwater River. In this spot, on a grassy sward, facing the old castle, lunch was partaken of.

The next halt was at Battleford Bridge, the site of the battle of Benburb, in which Owen Roe O'Neill met and defeated an English and Scottish army, under General Munroe, on 5th June, 1646. On the return journey to Armagh, the party traversed the plain where the battle of the Yellow Ford was fought. In this fight, on the 14th August, 1598, Hugh O'Neill defeated Marshall Bagnal, who was slain.

On arrival at the Palace in Armagh, the Lord Primate received the members, and very kindly described the historic pictures which it contains. He also described the recent discoveries, and the attempts at preservation made at the Franciscan Priory inside the demesne. This priory was founded in 1263 A.D., and is an interesting example of Celtic-Romanesque architecture. Before leaving the Palace grounds, the President (Mr. R. S. Lepper) returned warm thanks to His Grace for his great kindness.

Tea was provided in the Charlemont Arms Hotel, and at a business meeting afterwards Mr. Lepper moved a hearty vote of thanks to all who had assisted in making the excursion so great a success, particularly Mr. James Lennon, Town Clerk of Armagh. Belfast was reached at an early hour after a delightful excursion, marked by perfect weather.

LONDONDERRY, INISHOWEN AND VALLEY OF THE ROE.

11th—13th July, 1927. Conductors—Rev. E. M. Gumley and E. N. Carrothers. Number present, 33.

The party left York Road Station at 9.30 a.m. on Monday, 11th July, and took up headquarters at the Northern Counties Hotel, Londonderry. In the afternoon visits were paid to the Guildhall, Cathedral of St. Columb, St. Columb's College, Windmill Hill, Long Tower Church, and the Walls. After dinner the majority of the party availed themselves of Dean King's kind invitation to see his collection of early-printed books. On Tuesday Inishowen was visited. At the Grainan of Aileach, Col. Berry gave an interesting sketch of the fortress and its associations. From the Grainan the party proceeded to the Lough Swilly Hotel, Buncrana, for lunch. During the circuit of Inishowen the following objects of interest were inspected: At Fahan—St. Mura's Cross, the Lucky Stone, small Greek Cross, and ruins of the 16th Century Church; at Carndonagh—the Cross of Donagh, Grave Slab with elaborate interlacing, and large 16th Century Bell in the Parish Church; at Clonca—Old Church, "Magnus M'Orriston" Tombstone from Iona, and St. Buodan's Cross.

On Wednesday morning the party visited the garden at Belmont, Londonderry, where they saw St. Columb's Stone. Afterwards the journey was continued to Dungiven, *via* Claudy and Feeny, a short stop being made at the ruins of Cumber Castle. Before entering Dungiven, Banagher Church and "O'Heney's Tomb" were visited. The next stop was at Dungiven Priory, which contains the beautiful tomb of Cooey-na-gall. Tea was provided at Dungiven Castle (a plantation erection, with bawn). A visit to Bovevagh Church concluded the sightseeing. The party returned from Limavady to Belfast, dinner being served on the train. The arrangements for the long excursion were in the hands of Mr. E. N. Carrothers.

CARRICKFERGUS.

23rd July, 1927. Conductor—Joseph Skillen.
Number present, 60.

About sixty members and friends met the conductor for the day at the Midland Station for the 2-25 p.m. train. On arrival at Carrickfergus a visit was made to all that is left of the old wall which formerly surrounded the town. and a walk through the park and past the site of the old priory of the Franciscans, founded A.D. 1232, brought the party to the Town Hall. Here Mr. David Law (Town Clerk) had the ancient charters, burgess rolls and seals associated with the eventful history of Carrickfergus ready for inspection. The President (Mr. R. S. Lepper) returned thanks to Mr. Law for his kindness.

On arriving at the church of St. Nicholas, the Arch-deacon of Down, Rev. F. J. M'Neice, B.D., gave a most interesting account of the foundation and history of the church, and afterwards pointed out the various features of interest in the building. Leaving the church, the last call was at the castle, and this old Norman fortress was thoroughly explored.

KNOCKMANY AND CLOGHER.

6th August, 1927. Conductors—A. A. Campbell and Alex. Pringle.
Number present 45.

The party travelled to Augher *via* the Great Northern and Clogher Valley Railways. From Augher they motored to Cecil Manor demesne, where, leaving the cars, they walked up Knockmany, an eminence rising abruptly to some 500 feet above the ancient plain of Clossach. The hill has only recently been cleared of the primeval woods. At the summit the remains of the rude stone tumulus were inspected and described. The stones, which are ornamented with petroglyphs of a type similar to those of New Grange, are ascribed to the Bronze Age. An eminent British authority is of opinion that they are Sumerian in character, being perhaps among the earliest inscriptions in the British Isles.

After lunch, partaken under the trees on the summit, in a thunderstorm, the geologists and botanists were conducted to Lumford Glen, a glacial dry gap forming a picturesque gorge of about 300 feet in depth. The archæologists returned to the cars and proceeded to Clogher, where the Cathedral, founded by St. Patrick, and

some very fine early Celtic stone crosses were examined. In the Cathedral grounds was seen the Menhir, believed to have been covered with gold and worshipped as an idol, from which Clogher (the stone of gold) derives its name.

On being joined here by the Lumford Glen section, the whole party motored to Augher for tea, afterwards entraining for Belfast, which was reached about 8 o'clock

GIANT'S CAUSEWAY.

20th August, 1927. Conductor—A. M'I. Cleland.
Number present, 35.

A party of 29 went by the 12-15 p.m. express to Portrush, where they were joined by a contingent of the Route Naturalists' Field Club. At the start weather conditions were very unsettled, but by the time the Causeway was reached there was brilliant sunshine, which brought out the rich colouring of the magnificent range of cliffs, edged by the calmest of seas, crossed by fleeting cloud shadows.

The party at once made for the Causeway path, and at the foot of the ascent to the Giant's Organ, the conductor drew attention to the principal geological points to be noted. The Causeway cliffs are the finest exposure of the Antrim basaltic plateaux to be seen anywhere. Not only can the marked differences between the lower and upper series of basalts be clearly seen, but there may also be noted evidences which go to show that the original flows of lava were intermittent, each flow being followed by a period of volcanic quiescence, longer or shorter as the case might be. These periods of quiescence were sometimes so prolonged as to enable atmospheric agencies to disintegrate the uppermost layers of the last overflow and entirely change the nature of the original basalt. Such changes are seen at their best just below the Chimney Tops, where some forty or more feet of reddish-brown or purple rock, quite soft and easily broken, is seen lying upon the unaltered basalt. At the farthest point that time allowed the members to go, a soil resulting from the disintegrated basalt had developed, in days gone by, a scanty vegetation, and this is now seen as a band of black lignite, or brown coal, underlying the lowermost stratum of the upper basaltic series.

On reaching the Châlet again, the President (Mr. R. S. Lepper) entertained the party to light refreshments, after which the Causeway proper was explored.

The return home was by the 7-20 p.m. train, and during the run an excellent tea was served.

COLERAINE AND MOUNT SANDAL.

3rd September, 1927. Conductor—James Orr.
Number present, 40.

The members gathered at the Midland Station at 9 a.m. for their tenth excursion of the season. On arrival in Coleraine, they proceeded to the Town Hall, where they received a civic welcome, and inspected the Town Mace and the Andrea Ferrara Sword, besides other objects of local antiquarian interest. Mr. D. H. Christie (Chairman of the Urban Council) extended a hearty welcome to the Club, to which sincere thanks were returned by the President (Mr. R. S. Lepper).

The party then visited St. Patrick's Church, where the principal features were explained by the Rev. Canon Bradley, M.A. The members were interested to learn that in all probability St. Patrick here founded the first church, which has since then borne his name. Subsequently, members proceeded to Mount Sandal, the Salmon Leap, Loughan, Camus, Aghadowey, Macosquin, the Sconce and Knockmalt, points of historic interest aptly described by Mr. Samuel Henry, Coleraine, who kindly acted as guide to the party.

On return to Coleraine, tea was served at the New Row Lecture Hall, after which the President expressed the thanks of the Club to all those who had contributed to make the day such a success.

BALLYDRAIN.

24th September, 1927. Conductors—E. N. Carrothers and A. E. Muskett. Number present, 50.

This, the last excursion of the season, took the form of a fungus foray. The party, conducted by the Honorary Secretaries of the Club, met at the Old Museum, and were conveyed in motors to Ballydrain, the beautiful estate of Mr. John B. Morrison. On arrival at the woods, the object of the excursion was explained, and a brief outline given of fungi in general. Members were then provided with chip baskets for the spoils, and enthusiastic collecting

was soon in progress. The foray continued till 5-30 p.m., when the party assembled for a review of the afternoon's work. About one hundred species of the larger fungi were collected, including several not previously found in Ireland. A considerable number were also added to the list of species found in Ulster, and some records were verified for the first time since they were made by Templeton, the famous Belfast naturalist, about 100 years ago. Before leaving for Belfast a hearty vote of thanks was passed to Mr. Morrison for his courtesy in granting permission to visit the demesne.

WINTER SESSION.

The authors of the Papers, of which abstracts are given, are alone responsible for the views expressed therein.

CONVERSAZIONE.

The Winter Session opened with a Conversazione held in the Assembly Hall, Fisherwick Place, on Tuesday, 25th October, 1927. There was a large attendance of members and friends. Tea was served from 7 to 8 p.m. The exhibits included:—

Botany—George Barnett, *Bartsia viscosa* from County Londonderry; N. Carrothers, Ulster plants, native and introduced; Capt. Chase, rare plants from west of Ireland and Continental flora; H. Cairns, diseases of plants; M. P. Crawford, photographs of wild flowers; Prof. S. P. Mercer, seeds and imbibition of water; Miss Rea, myxomycetes; Miss Sayers, useful handbooks for field botanists; C. T. Ingold and J. I. Armstrong, experiments with indicators.

Geology—Robert Bell, local minerals; A. M'I. Cleland, material from old land surface, Knockadona Quarry, lithomarge from Ballylumford and Giant's Causeway, junction of Rhyolite and Silurian Grit, fossilised wood and lignite; Mrs. Cleland, boulders from Brookmount esker; A. H. Davison, Rhyolites from Antrim, Down and Derry, and Barytes on Dolomite from W. Cumberland; J. Orr, junction of Chalk and Basalt; R. J. Welch, Holocene freshwater mollusks.

Zoology—D. J. Carpenter, British butterflies and moths; W. M. Crawford, Indian silk moths and leaf butterflies and an Oak Beauty moth from Co. Down; A. M'I. Cleland, sea urchins from Society Islands and New Zealand; J. Orr, tits and thrushes; George C. Reilly, mosquitoes; Dr. C. J. Milligan, Two-barred Crossbill from Co. Antrim; R. J. Welch, operculate shells,

Archæology—A. H. Davison, J. Orr, A. W. Stelfox and J. A. S. Stendall, material from an excavated kitchen midden, Whitepark Bay, June, 1927; J. Skillen, artifacts from the recently discovered neolithic site at Ballygally, flints, scrapers and implements collected in 1927, rostrocarinates.

Miscellaneous—Miss Mawdsley, old work baskets and sewing materials; W. A. Green, landscape photographs; J. Skillen, evolution of the rifle cartridge; R. J. Welch, heraldic exhibits. Messrs Lizars had an exhibit of microscopes, magnifying glasses, etc., and Messrs. W. E. Mayne displayed a collection of natural history books and manuals.

Junior Section—There was, as usual, a large and varied display of exhibits of plants, shells, flints and fossils, the exhibitors being the Misses Rosaleen Capper, Agatha R. Crawford, Nora Fisher, Alice, Barbara and Ethne Glendinning, Joan and Peggy Loewenthal, and the Masters J. Blair and A. M'Donald.

At 9-10 p.m. a business meeting was held. The President (Mr. R. S. Lepper) occupied the chair, and suggested that exhibits at the *Conversazione* should, as far as possible, be local and bear a relation to the work of the Club.

Mr. A. E. Muskett, one of the hon. secretaries, introduced Dr. R. Ll. Praeger, B.E., M.R.I.A., as a member eligible to receive the Club's Commemoration Medal, which was presented by the President. Dr. Praeger suitably replied, expressing his thanks for the honour conferred.

The Club's prize for the best collection of photographs illustrating any branch of club work was awarded to Mr. A. M'I. Cleland.

During the evening the following prizes were awarded to Junior members:—For collection of marine shells, Master J. Williams; for local fossils, (1) Miss Nora Fisher and (2) Master Jack Blair; for best essay on "Birds of the Seashore," (1) Master Colin Middleton and (2) Miss Agatha R. Crawford; best living zoological exhibit, Miss Joan Loewenthal and Miss A. R. Crawford (equal); best collection of fungi, the Misses Barbara and Ethne Glendinning; best collection of wild fruits, (1) Misses Alice Glendinning and Lois M'Keown, and (2) Miss Nora Stendall.

A number of lantern slides of photographs taken on the Club's summer excursions were shown by Mr. A. R. Hogg and explained by Mr. J. A. S. Stendall.

PRESIDENT'S INAUGURAL ADDRESS
TO
THE BELFAST NATURALISTS' FIELD CLUB,
ON 15th NOVEMBER, 1927,
BY
R. S. LEPPER, M.A., LL.M. (Cantab.), F.R.Hist.S.,
with the collaboration of
MR. ROBERT BELL (Geology),
REV. W. R. MEGAW, B.A., and CAPT. C. D. CHASE, M.C., M.A.
(Botany),
MR. J. A. SIDNEY STENDALL, M.R.I.A., M.B.O.U. (Zoology),
and
MR. R. J. WELCH, M.Sc., M.R.I.A. (Geology, Zoology,
Prehistoric Antiquities, and Early History of the B.N.F.C.)

To-night are we seven battalions
Yearning to sleep in the land of Erin.
Thirteen years were we absent
In the rich lands of Rama,
Far from our country and province.
Yet dear is that isle in the west,
Erin of many strongholds,
Ulster of many hostages!
Fain would we rest at home to-night.

The Warfare of Congal

(adapted from the Translation for the Irish
Texts Society.)

EDITORS' NOTE.—Through the generosity of the President in kindly offering to bear much of the cost (including the illustrations) the Editors are able to present his address in fuller form than otherwise would have been possible.

*RESPICE, PROSPICE!**The B.N.F.C. and Ulster's Need for Local Societies.*

At the first ordinary meeting of the Winter Session, held in the Museum, College Square North, Belfast, on Tuesday, 15th November, 1927, the President (Mr. R. S. Lepper, M.A., LL.M. (Cantab.), F.R.Hist.S.) delivered the inaugural address.

He took as its title *Respice, Prospice!* (Look back and look forward!), the motto of an old Co. Limerick family, the Lloyds of Tower Hill, whose arms, *a lion rampant regardant*, impaled with the *cross* of De Burgh of Dromkeen, still hung in a crumbling church tower near their mansion, looking across the Golden Vale to the Galtee Mountains; a family who, prominent as clerics, lawyers and landowners, in the eighteenth century, gave to Arthur Young valuable results of scientific agricultural experiments, and in the nineteenth and twentieth gave from their kinsfolk to the Belfast Naturalists' Field Club several of its most active and eminent members.

One who had spent much of his life on the exacting work of a Professor of History in south India, and had been thus diverted from the study of natural science, and whose slight efforts in that direction consisted in two short papers on the Geography and Anthropology of S.W. India, read before the British Association at Cambridge in 1904, and now embedded in the lower strata of its Reports, must frankly disclaim any fitness as a scientist to preside over a Society dealing with natural science.

And though the Club had an active antiquarian side, neither the study of history, under the great scholars of Cambridge, Leipzig and London—though one must be a dull dog not to pick up some crumbs that fell from such masters' tables—; nor the organising and teaching of that subject to University students in India; nor visits to ancient sites and buildings scattered over three continents; nor yet some slight and obscure research in the archives of London and Dublin; could fit one who had been absent so long from home for the dizzy and slippery perch of an Irish archæologist.

But he had had at least an admirable example and much help from his distinguished predecessor in the chair (Mr. W. M. Crawford, B.A., F.E.S., F.Z.S.), who, having retired from a high administrative post in India, had given

his great abilities to steady, valuable, and unobtrusive work for the Club, whose family were among the keenest members of the Junior Section, and whose superb collection of Indian Butterflies was ample proof of his devotion to science, and a delight and wonder to his friends.

Respite! Since the last Presidential Address they had to mourn the death of an eminent and revered Honorary Member, probably the finest ornithologist in Ulster, Mr. Nevin H. Foster, F.L.S., M.R.I.A., M.B.O.U., whose splendid scientific work, generous help to younger students, and most lovable nature, would long be remembered by all who knew him.

Looking back further on the sixty-four years of the Club's vigorous scientific life, as Dr. Lloyd Praeger would soon deal authoritatively with its early history, he need merely allude shortly to the fine scientific record of a few of its most eminent members, some, happily, still with them.

Among the elders, they honoured the late Joseph Wright, a great geologist, whose collection of rare Carboniferous fossils from southern Ireland was in the South Kensington Museum, and a front-rank marine zoologist, whose magnificent collection of Foraminifera, including many types new to science, was in the National Museum, Dublin; Mr. Wm. Swanston, a great geologist, happily still living, whose treatise on the Silurian Rocks of Co. Down was still the classical work on the subject, whose fine collection of fossils was in the Belfast Museum, and who, as a sound all-round naturalist, was an admirable Secretary and Conductor of Field Excursions for many years; the late S. A. Stewart, who, besides being one of the best geologists in Ireland, and a keen marine zoologist, was, above all, a great botanist, an eminent authority on flowering plants, and chief author of the *Flora of N.E. Ireland*, published by the Club; the late Nevin H. Foster, that great ornithologist, whose recent loss they deplored; the late Rev. Mr. Waddell, a fine general botanist; the late Rev. Canon Lett, a fine botanist and antiquary; the late W. H. Phillips, one of the leading European authorities on ferns; and, happily still with them, Mr. Nathaniel Carrothers, whose splendid knowledge of field botany was equalled only by his kindness in imparting it to younger members.

Among the older antiquaries they honoured the names of W. H. Patterson, a member of a great scientific family; Rev. Canon Grainger, that eminent scholar, whose splendid

collection was the basis of the Belfast Museum collection of Irish Antiquities, and whose kindly personality was still revered; W. J. Knowles, from whose huge collection of Ulster prehistoric implements, sold in London, many valuable items had come to Belfast Museum; Rev. Dr. Buick, that most scholarly of antiquaries; F. J. Bigger, that enthusiastic student of the past, whose wide reading, warm interest in all Irish antiquities, and ready pen, did so much to stimulate and spread a love of ancient and mediaeval buildings; and, happily still living, that fine antiquary and delicate draughtsman, Mr. Jas. J. Phillips, now a member of the active Route Naturalists' Field Club in N. Antrim, whose scholarly and admirably illustrated accounts of Grey Abbey, Inch Abbey, Downpatrick Cathedral, and Dundrum Castle, beginning in 1874, were still classical works.

Among the Club's active Scientists of middle life, we had such men as Mr. Robert Bell, whose unique knowledge of the field geology of N.E. Ulster had been of the greatest service to the Geological and other Surveys; Mr. R. J. Welch, who, besides being a conchologist of eminence, was a recognised authority on prehistoric antiquities, and a fine all round antiquary and geologist; Dr. R. Lloyd Praeger, a botanist of world-wide celebrity, whose *Topographical Botany of Ireland* was a monument of scientific thoroughness.

In all these branches useful work was being done also by younger members; while a Junior Section of keen recruits was in training.

• *Prospice!* But while much good work had been and was being done, if the scientific and antiquarian needs of Northern Ireland, were to be met fully, a more comprehensive organisation was required, by the revival or establishment throughout Ulster of Local Scientific and Antiquarian Societies, at first perhaps of a very simple structure, but working in friendly alliance with each other, and, perhaps, like the Route Naturalists' Field Club, affiliated to the B.N.F.C. Such local Societies were specially needed in thriving towns in those districts farthest from Belfast.

Convinced himself of the need for local Societies in the field of antiquities, for the preservation of known, and the discovery and recording of fresh objects of interest, he had consulted, and gladly availed himself of the valuable advice and help of such high authorities on other subjects as Mr.

Robert Bell on geology, Rev. W. R. Megaw and Capt. C. D. Chase on botany, and Mr. J. A. S. Stendall on zoology, and also of the wonderfully comprehensive knowledge of Mr. R. J. Welch in all these domains of science, as well as on the stony tracts of prehistoric antiquity.

They also fully endorsed the necessity for such local Societies in the interest of their respective branches of science, and had generously allowed him to make use of their detailed knowledge, and supplied him with many specific instances to enforce the general argument.

The admirable photographic records of Mr. A. M'I. Cleland in geology, and of Mr. and Mrs. Albert Campbell and Mr. T. E. Osborne in antiquities, and of the Belfast Museum, had been generously lent to supplement the celebrated collections by Mr. Welch and Mr. A. R. Hogg, as lantern illustrations. On a large scale orographical map of Northern Ireland the President then showed how the distribution of mountain masses, river valleys, and lakes, the natural and artificial lines of communication, and the marked tendency in modern times for the people to flock into towns on or near the estuaries of the east and north coasts, where sea coal could be procured readily for industries, led to an increasingly uneven distribution of population, with a preponderance of big towns to the east and south of Lough Neagh, and a large, difficult, mountainous, and thinly populated, but scientifically very interesting, area west of it.

With a territory extending some 85 miles from north to south, by 112 miles from west to east, and often mountainous, the capital of the country being almost at its extreme east, and the second city almost at its extreme north, and a huge shallow lake in the middle, it was impossible, from such starting points, to do thorough field work in the interesting central and south-western areas, even in these days of quick road transport. So, if those large and important areas were not to remain neglected, local Societies in or near them were plainly needed.

Even for the coastal mountain areas of Antrim and Down, so full of geological interest, they would be of great benefit, as witness the valuable work of the Route Field Club in N. Antrim, which seemed almost the sole survivor of several once active and useful local scientific societies, and dealt with the district from Portrush to Ballymoney, and from the Bann to Fair Head,

The need for these local Societies was the more urgent since that admirable institution *The National Trust for Places of Historic Interest or Natural Beauty*, so powerful for good in Great Britain, scarcely functioned in Ulster, while the Northern Government had not yet taken power to acquire lands as Nature Reserves, nor been able to provide adequate funds for the preservation of our antiquities, though in this latter respect it had made a good beginning.

This excellent form of public service had hitherto failed to attract most wealthy people, if any such remained. But they should not forget the great debt of gratitude they owed to those of the nobility and landed gentry who had both encouraged fresh planting and preserved old woodlands, and other beautiful or interesting areas, as well as many of the finest remnants of antiquity, opening them generously to genuine students.

They must specially express their gratitude to His Grace the Governor, head both of Ulster and of the great House of Hamilton, for his goodness in presenting, as a public park, the beautiful Strabane Glen, with its very local plants. If some wealthy person would do the same with the banks and meadows of the Lagan, and other even more interesting areas, they would indeed be getting on with the rescue of nature's beauty spots and bowers.

GEOLOGY.*

They all knew that Ulster was geologically of extraordinary interest and diversity, a huge open air Geological Museum, any part of which could now be reached by motor in a week-end holiday from Belfast.

In spite of its exceptional complexity, Ulster geology had not been neglected by the B.N.F.C., though one could wish that the public appreciated better their splendid geological inheritance.

The surface geology of Ulster had been admirably surveyed in the monographs of Dr. Derryhouse and Professor Charlesworth, eminent members of the B.N.F.C.

The special researches of such splendid workers as Stewart on *Fossils*, Wright on *Foraminifera*, Swanston and Lapworth on *Silurian Rocks*, Lloyd Praeger on *The Sections underlying Alexandra Dock, Belfast*, all published by the

*With the collaboration of Messrs. Robert Bell and R. J. Welch, M.Sc., M.R.I.A.

Club, were of fundamental importance; and their works, in its *Proceedings* or elsewhere, were continually quoted as authoritative in the official Memoirs of the Geological Survey of Ireland. Indeed, these official Memoirs often had to be corrected by the more detailed knowledge of the Club's eminent field geologist, Mr. Robert Bell.

In the prompt reporting of newly exposed sections of interest, the systematic and detailed examination of the more distant areas, and the preservation of important geological sites, the establishment of local Scientific Societies, including some keen geologists, would help; for the public were still much too ignorant to realise the geological value of a deep sunk well, a disused quarry, or the outcrop of a rare rock; and sometimes an unworthy use was found for a geological rarity.

The danger was not so much of an interesting rock being entirely quarried away, as of its being buried by the falling in of a neglected quarry, or even under a refuse dump.

Mr. Robert Bell had kindly allowed the President to fill his pitcher from the overflowing well of his knowledge, and had given him many instances where rare and interesting rocks were injured, or likely to be injured, and where great vigilance, or even action by Government, central or local, or by private owners, was needed.

Co. DOWN. The rocks at Coalpit Bay, just south of Donaghadee, famous for their Graptolites, examined and described by Mr. Wm. Swanston and Professor Lapworth (*B.N.F.C. Pro. App.* 1887), a classic site visited by geologists from distant lands, needed protection from becoming a rubbish dump.

The Triassic Sandstone, ripple-marked and sun-cracked, the Dolerite sills and the Basaltic dyke at Scrabo Hill; and the Rhyolite exposures at Island Derry, S.W. of Hillsborough, unique in Co. Down, alike needed protection.

Co. ARMAGH. The Carboniferous rocks, so rich in fossils, at Red Barn quarry, just south of Armagh, had special geological interest; while Carrickaloughran, $1\frac{1}{2}$ miles N.W. of Arinagh, had many Carboniferous fossils and a Basaltic dyke.

Co. FERMANAGH. Here a large area of Carboniferous Limestone in solution gave a most interesting and remark-

BRITISH
MUSEUM
14 MAY 30
NATURAL
HISTORY.

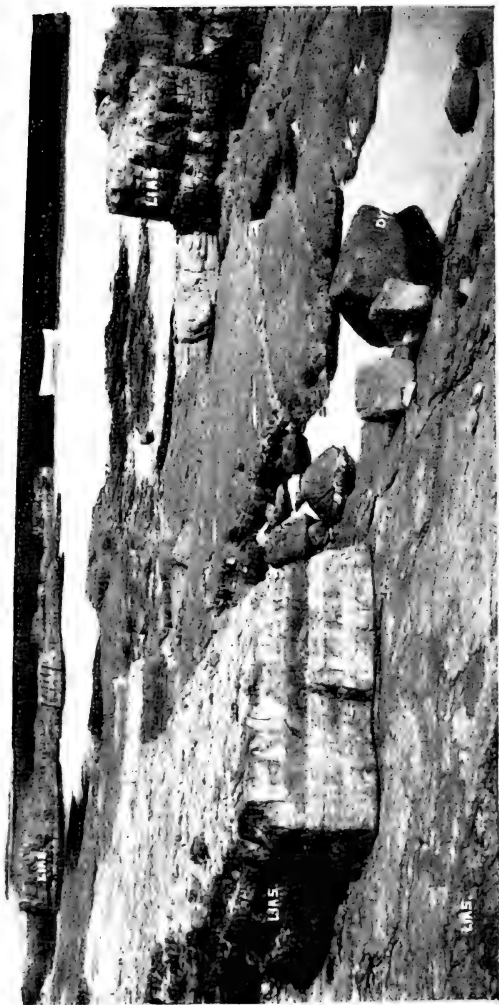


PHOTO: R. J. WELCH,

INDURATED LIAS BED AT PORTRUSH.

By Permission of *Irish Naturalists' Journal*.

able tangle of underground rivers and caverns, and other associated geological features, influencing the botany, zoology, and archæology of that district.

Co. TYRONE. The County Council had been working a quarry at Orritor, W. of Cookstown, which exposed a variety of igneous rocks, and especially a massive dyke of pink Rhyolite, showing in microscopic section an excellent flow structure. This Rhyolite dyke at least should be protected.

The Slate quarry, $2\frac{1}{2}$ miles W. of Pomeroy, showing Silurian shales containing graptolites and trilobites, was of great geological interest, and worth protection.

Co. DERRY. On the west side of Benbradagh, near Dungiven, a Chalk quarry, rich in fossils, was classic geological ground; while another, $2\frac{1}{2}$ miles S. of Moneymore, extremely rich in fossils, rested on Triassic Sandstone.

Co. ANTRIM. Here many most valuable geological sections needed careful watching and protection from serious damage, in the interest of future generations.

At Portrush, on the shore near the Blue Pool, the people were using as a refuse dump an outcrop of Lower Lias, world-famous in the history of geology since about 1790, when it was adduced by the Neptunists as proof of the aqueous origin of Basalt, for which they had mistaken a Lias containing ammonites, but baked hard by volcanic dykes, and with a flinty fracture. This deposit was often visited by geologists from many countries, and urgently needed protection from dumping, by the help of the Urban Council, and the erection of a notice explaining its importance.

At Ballycloughan, on a hill in the fork between the Broughshane and Ballymena roads, Grey Rhyolite with vertical flow structure was exposed, suggesting its occupation of a volcanic neck. At Barnish, near Sandy Braes, was a Rhyolite exposure, beautifully banded, pink in colour, with yellow layers showing horizontal flow structure. This was being quarried for garden gravel and building purposes.

At Tardree, the dome of the mountain represented a volcanic core, with the acid rocks of Co. Antrim, from pink Rhyolite to black Obsidian, forming plateaux to north and south; the main exposure being in the quarry on the south side of Tardree Mountain, and showing a well marked columnar structure. This had formerly been used for building, and might need protection.

At the shipyard on the Curran, Larne, an important section of the raised beach, containing flint implements and shells, needed preservation.

At Ballylumford, Islandmagee, was a small area where upper Basalt Iron Ore had been worked by the late Dr. Ritchie, of Belfast. This section, still exposed, showed decomposing Basalt, with cavities filled with Pisolitic red Iron Ore, Levyne, Gmelinite, red Bole, and blue and purple Lithomarge.

At Whitehead, on the railway, south of the station, the quarry showed columnar and amygdaloidal Basalt, the latter having cavities lined with Natrolite, Chabasite, Phacolite and Chalk. Boulder Clay was also found. Luckily the nearness of the road had stopped quarrying on this very interesting site.

Of the southern escarpment of Carnmoney Hill, N. of Belfast, part, apparently a volcanic neck, was a highly crystalline Dolerite, with cavities filled with Hullite and Chalcedony, and having a consolidated columnar structure.

On the south side of Cave Hill, Belfast, at Ballyaghagan, Mesozoic rocks were well exposed in the bed of the stream in Carr's Glen, notching the escarpment between Cave Hill and Squire's Hill, the Upper Cretaceous, Lower Lias, and Triassic rocks being well developed. This classic ground of local geology should be carefully guarded for the training of future students.

BOTANY.*

Though the botany of Ulster, excluding Co. Donegal, could not vie with its geology in complexity and interest, it was rich in certain branches such as salt marsh plants, since the absence of hard frosts, and the existence of long, sunny, moist flats, as on Strangford Lough and its stream system, encouraged a rich and varied flora.

On the present state of botanical knowledge in Ulster, and the need for, and scope of local societies studying botany, the President had also been privileged to avail himself of the expert knowledge and advice of such exact, experienced, and comprehensive botanists as Rev. W. R. Megaw, B.A., a recognised authority on mosses and allied plants, and Capt. C. D. Chase, M.C., M.A., whose wide

*With the collaboration of Rev. W. R. Megaw, B.A., and Capt. C. D. Chase, M.C., M.A.

knowledge of plants, of Ulster, of Europe generally, and even of other continents, bade fair to become encyclopædic.

They pointed out that botanical information about Counties Antrim, Down and Derry was well up to date, and available in the *Flora of North-East Ireland*, by Messrs. Stewart and Corry, distinguished former members of the Club, and in the two Supplements to that Flora, by eminent botanists still living. For the three other counties, no better book could be had than Dr. Lloyd Praeger's masterly *Irish Topographical Botany*.

So far only flowering plants and ferns had been dealt with. The lower plants—mosses, liverworts, lichens, fungi, and algæ, offered fields for investigation. Only a few had paid attention to these most interesting groups, and much useful work remained to be done.

Members of the Club who had already taken up the study of these plants were always glad to help beginners, as well as to co-operate with more advanced workers.

No systematic search of the whole area of the Six Counties had yet been made, although the *best ground* had been investigated from time to time. But even this *best ground* might yield further results to botanists living in each neighbourhood, and working it thoroughly; for much of the present knowledge of the Ulster flora had been gathered in one day visits by the B.N.F.C., or by individuals.

Each of the Six Counties had one or more plants peculiar to that county. Most of these were rare, and should be preserved, perhaps best by concealing their habitats.

Numerous old records of rare plants needed confirmation. If local Societies, affiliated to the B.N.F.C., were formed, lists of these records might be sent from headquarters to the local Secretaries. This would encourage these local Societies to do useful work, and might prevent wasteful overlapping. Such local Societies might well be formed at the following centres, at least:—

Co. DOWN: NEWRY—for the least frequented parts of the Mourne Mountains.

Co. ARMAGH: ARMAGH CITY—for the riverside and bog lands of that much cultivated county;

Co. FERMANAGH: ENNISKILLEN—for the Erne Valley;

Co. TYRONE: DUNGANNON—for the western shores of Lough Neagh;

Co. DERRY: LONDONDERRY—for the Sperrin Mountains.

Co. ANTRIM is at present adequately supplied by the B.N.F.C. and the Route N.F.C.

Further, a central Club herbarium in Belfast, accessible to all botanical members, was still a great want; but perhaps this need might be supplied through the splendid new Belfast City Museum.

ZOOLOGY.*

For this branch of science the President had naturally sought, and fortunately obtained, the expert guidance of their distinguished ex-President, Mr. J. A. S. Stendall, M.R.I.A., M.B.O.U., whose work as a zoologist, alike in the field and in the museum, spoke for itself, and of whose views he was for the time the mouthpiece.

In zoology, though much work had been done by former naturalists, especially among the higher animals, a vast field was still open. Men like Templeton, Thompson, Patterson, Ussher, D. C. Campbell, and Foster, had given them notes and records in plenty; but the results of their labours were getting out of date, and fresh surveys were needed.

In Northern Ireland there were large areas almost untouched by the zoologist, and group of animals that had got little or no attention.

Naturally Counties Antrim and Down had got most attention, but even they still had areas well worth investigation.

In County Antrim, within the triangle having Ballymena, Ballycastle and Cushendall as its points, we had a piece of wild, mountainous land, practically unknown to both the botanist and the zoologist. We knew nothing of its mammal life, and little of its bird life, while records of its invertebrates did not exist. In these days of easy transport there was little excuse for that state of affairs.

Co. Down was not so bad, yet had been worked only in patches, for its birds here, its butterflies and moths, or its isopods there; its spider fauna had been touched on, its mollusks done really well. Yet, who could say it had been worked out?

Co. Derry, for zoologists, was a land of promise. Who could tell what might be found in the large wild Sperrin

*With the collaboration of Mr. J. A. Sidney Stendall, M.R.I.A., M.B.O.U., of the Belfast Museum.

area, or in the fertile Moyola valley? The many mountain crags, moorlands, lakes, and glens, would well repay investigation.

Counties Armagh and Tyrone were in a similar state, while Co. Fermanagh, apart from the Erne basin, needed much attention.

Scattered over the Six Counties were individuals keenly interested in all branches of natural history, who observed and reported at irregular intervals, but, through a lack of co-operation between themselves and some central body, their work was largely futile. If only each of them could belong to a local Society, and could get knowledge of requirements from time to time, a great advance would have been made.

Reports were wanted of mammals, of the migratory movements, and the habits of birds—rare, unusual, or common; of the prevalence of certain insects, mollusks, and other invertebrates.

Properly localised collections of specimens were also needed to allow an exhaustive faunistic survey to be made.

Zoology then called for men and for co-operation, and called also for money, to preserve parts of Ulster from (1) the quarry owner; (2) the speculative builder; (3) the professional collector; (4) the vandal.

The motor car was both a friend and a foe to zoology, conveying over long distances with ease and speed both the student and the pilferer. The more motor cars, the greater the need of good roads, and of road metal in bulk; and too often to provide it the quarry owner ate away a zoological paradise.

Again, where there were rare species of plants or animals the professional collector would appear.

To save some areas from such dangers there was but one way—purchase or presentation for Nature Reserves, such as the National Trust was organising so well in Great Britain. Among places suited for Reserves, one might mention Muck Island, off Islandmagee; Gun's Island, off Ballyhornan Bay; the old wood in Belvoir Park; and Mount Sandal wood, near Coleraine.

Meantime good work could be, and was, being done by a few keen workers making individual surveys of small definite areas, dealing with one particular group in natural history.

The keeping of Appearance Records, or Phenological Surveys, with a view to their relation to Meteorology being worked out later, as being arranged by Mr. A. W. Stelfox, would also prove helpful.

ANTIQUITIES.

Ulster in ancient and mediæval times was very different from modern Ulster. A bleak territory at the end of the known World, with some 18 per cent. of high mountain land scattered over it, broken also by lakes and rivers, and by far larger areas of bog and swamp than at present, and with great tracts mostly covered by heavy cold boulder clay, and then largely overgrown by thick primeval forest, though now under pasture and tillage, it was no place for the rapid growth of civilisation and wealth.

The severity of its physiographic and climatic conditions made the struggle for existence always severe, and bred hardy races, while its nearness to the still bleaker Caledonia gave ready occasions for warfare. Ulstermen, of whatever race or creed, could always give a good account of themselves in warfare, whether against the rest of Ireland, Caledonia, Britain, or even the Roman Empire itself, and the history of the Province had been throughout military.

Hence, though they had many splendid prehistoric antiquities, dolmens and other sepulchral structures, and stone circles, countless earthen and stone ring forts, often with fine souterrains, and many crannogs, Christian antiquities were disappointing compared with those in the rest of Ireland.

They had indeed several very ancient Christian monastic sites, and the remains of some small, but most interesting early Christian churches, often in remote mountain districts, or on obscure islands, some fine carved crosses and stately round towers, and the broken stumps of many more, but they looked in vain for large, ornate, and imposing monasteries, cathedrals, and parish churches, such as were found in the other provinces. Ulster had been too wild and too poor a country to build and support great monasteries or cathedrals. Even the three de Courcy Abbeys—Grey Abbey, Inch Abbey, and Downpatrick—and the O'Cahan Priory at Dungiven, fine as they were, could not compare in size or decorative art with those in the rest of Ireland, while of large mediæval churches that at Carrickfergus alone remained, though much altered by rebuilding.

Of most small religious houses and old parish churches only mere fragments survived. Many had disappeared altogether for use as building material or road metal.

But on the military side Ulster had still some splendid old castles, notably Dundrum and Greencastle in Co. Down, and Carrickfergus and Dunluce in Co. Antrim; as well as many smaller castles of the later mediæval type, and seventeenth century fortified houses, especially by the shore of sea or lough in Counties Down, Fermanagh, and Antrim. Many Ulster castles too had suffered severely from decay, defacement, or rebuilding, many had been deliberately pulled down, several were in great danger of demolition for space clearance, or even for road metal.

What, then, had been done so far for Ulster antiquities?

Visiting, measuring and recording. This was perhaps the most urgent need at present. The B.N.F.C. had, for very many years, made a practice of visiting, under capable guidance, antiquities of special importance all over, and even outside the Six Counties, often in remote districts, and thus stimulating local interest in them. Several of its members had excellent photographic records of them. More of these, with detailed measurements, were needed.

Description, topographic and historic. Many of the more accessible prehistoric, and most of the larger historic structures, in so far as visible above the ground, had been described and illustrated in learned periodicals such as the *Journal of the Royal Society of Antiquaries of Ireland*, and the *Ulster Journal of Archaeology*—Old and New Series—and in the publications of the Belfast Natural History and Philosophical Society, and B.N.F.C.

In addition to various general and special work on prehistoric archæology, we had some outstanding historical works helpful to the antiquary. For the Dioceses of Down and Connor the scholarly treatise of Bishop Reeves, based largely on MS. records, and the comprehensive and learned antiquarian survey of Monsignor O'Laverty; for Co. Fermanagh, those of the late Earl of Belmore; and for the later antiquities and history of Ulster generally, the great historical works of Rev. George Hill and Rev. Dr. Seaton Reid were still of high value.

These were supplemented on the one hand by a few scholarly recent works on the general antiquities and history of Ireland, and on the other by a steadily increasing number

of descriptive monographs on particular antiquities, being themselves of very varying value, and some long out of print and scarce.

Among the best of these earlier ones were the excellent and beautifully illustrated monographs on Grey Abbey, Inch Abbey, and Dundrum Castle, by that veteran antiquary, Mr. J. J. Phillips.

Preservation and Repairs. Until recently the Irish Board of Works had preserved and repaired, not always wisely, a very few. Otherwise we owed such antiquities as remained mainly to superstition and the care of individual landowners.

The B.N.F.C. had done little in this direction officially, though several of its members had helped to save a few, such as crosses.

The sister Society, the Belfast Natural History and Philosophical Society, had in recent years done notable work in the repair of ancient buildings by its Archæological Section.

Excavation. Little of this had been done as yet in Ulster beyond the recent work of the B.N.H. and P. Society. The B.N.F.C. had wisely abstained from it, owing to the almost complete lack in Ulster of modern trained excavators, a want which perhaps the Universities might yet supply. Without them excavation might well be disastrous; while there was still ample useful work to be done in recording and preserving antiquities.

Recent advance. The establishment of the Government of Northern Ireland in 1921, with the taking over, by the Northern Ministry of Finance, of the duties of the Irish Board of Works, including the care of state-protected Ancient Monuments in the Six Counties, opened a more hopeful period.

It became clear that, if Ulster Antiquities were to be saved comprehensive legislation of a modern type must be undertaken to provide wider powers, and permit more vigorous action than hitherto.

A strong committee, representing various learned societies, including the B.N.F.C., met to consider and determine what proposals should be submitted to Government, and your representatives got these restricted to such as would, in the circumstances, prove helpful, workable, and likely to win popular approval.

Eventually Government drafted and carried through the Northern Parliament a most useful, if not a heroic measure, *The Ancient Monuments Act* of 1926, based largely on British legislation, marking a great advance in the protection of Ulster antiquities, and contemplating eventually a complete survey of them.

The Ancient Monuments Act, 1926, at work. Under this Act the Ministry of Finance got the power of interfering to prevent the defacement or destruction of antiquities of national importance, as well as the duty of surveying and listing them, and of taking over and preserving such as it deemed suitable, as far as funds allowed.

In certain aspects of its work it was assisted by the *Ancient Monuments Advisory Committee*, appointed early in 1927 under the Act, and consisting of thirteen members, six being representatives of learned societies, including the B.N.F.C., and the others prominent antiquaries nominated by Government. As representing the B.N.F.C. on this Committee, the President could testify to its unobtrusive, diligent, and effective work in helping the Government to save several important antiquities in peril. It often brought such cases to the notice of Government, and its advice as to their history, claims to preservation, and treatment, was constantly sought and often adopted.

GOVERNMENT ACTIVITY.

It was but fair also to acknowledge the energy of the Ministry, its attention to the views of the Committee, and its readiness to adopt them so far as funds and other exigencies allowed. Since 1926 much good work had been done by Government as guardian of certain, though still very few, antiquities, and it was hoped that before long Carrickfergus and Dunluce Castles, and the late Mr. F. J. Bigger's small castle at Ardglass, would be preserved as national monuments, and that many others throughout Ulster would be saved for the future, as, with returning prosperity, more money became available.

The Royal Air Force too had most gallantly helped the good work by taking from the air many excellent photographs of ancient sites, which, it was hoped, might reveal traces of antiquities not readily seen in ground surveys, as had been the case in England.

The Home Department and the Police had also assisted to prevent the dispersal of small antiquarian finds, and to

secure them for the Belfast Museum. School inspectors, teachers, and even pupils had also helped by reporting remote antiquities.

The recent antiquarian work of Government came under eight heads, viz.:—

(1) Taking into its care important antiquities, so far as its funds permitted.

(2) Preserving and repairing with care and taste those in its keeping.

(3) Providing free expert architectural advice as to the treatment of others.

(4) Remonstrating with public bodies or private owners against serious neglect or threatened vandalism.

(5) Preventing serious injury to antiquities.

(6) Securing small but valuable antiquarian finds for the Belfast Museum.

(7) Collecting materials for a list of antiquities in the Six Counties.

(8) Procuring the aid of other agencies, the civil, military and police services, Local Government authorities, private bodies and individuals, in the reporting, surveying, and preservation of antiquities.

But Government, with its Advisory Committee, could not do everything. Its legal powers, jurisdiction, funds, and consequently its activities, were all strictly limited, especially in times of financial stringency. It was not even the sole public guardian of Ancient Monuments, for County Councils, however fit or unfit for such a duty, had an independent power of preserving or neglecting antiquities under their control.

Neither could it be everywhere and see everything. It could not hope to foresee and prevent every possible case of threatened injury to remotely situated antiquities; and many of the most interesting ones were in the least accessible places.

Local Societies needed. For the efficient preservation of antiquities in districts remote from headquarters, local scientific and antiquarian societies, each operating from a thriving town, and paying special attention to its surrounding district, would be necessary.

Such local societies could discover, visit, measure, photograph, record, and in many cases protect from neglect or injury, obscurely situated antiquities, could develop local

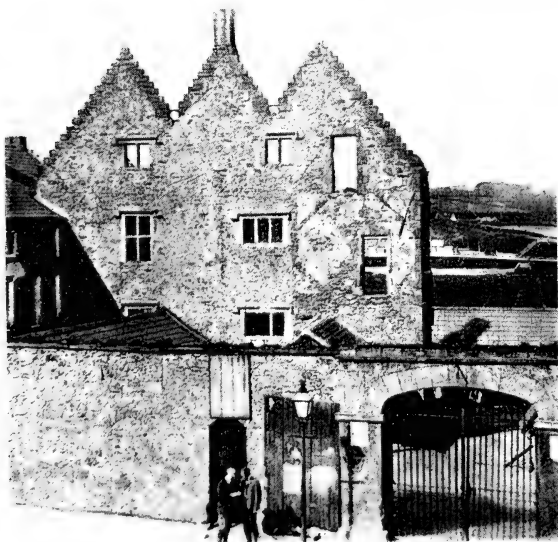
BRITISH
MUSEUM

14 MAY 30

NATURAL
HISTORY.



HENRY AVERY O'NEILL'S CASTLE.



THE STEWART CASTLE.

public interest in their preservation, could advise ignorant owners how to treat them, and, if need arose, give the central authorities timely warning as to those in danger; for unfortunately antiquities were often in great peril.

The chief dangers. The following were probably their chief dangers:—

(1) *Deliberate and complete destruction*, usually through ignorance of their antiquarian value, in the supposed interest of (a) the owner, (b) a builder, (c) a road contractor, (d) a local authority, (e) a church.

Great numbers of prehistoric antiquities in earth and stone had been so destroyed, and in many cases even their sites lost. Sometimes the object was to hunt for imaginary treasure, to remove an obstruction to farming, to find space for road widening or for a new building, to avoid the cost of repair and upkeep, or to provide stone for new buildings, and latterly even road metal.

Quite recent examples were the destruction of the Crannog at Hazelwood, Belfast, of White Abbey, Co. Antrim, of Charlemont Castle, Co. Tyrone.

(2) *Gradual decay and dilapidation through neglect*, and the growth of ivy, elder bushes, etc., in the walls, following partial destruction.

This had been the fate of many of our ancient castles, and nearly all our pre-reformation churches. Often a quite small sum of money could have prevented a great loss, as at Sketrick Castle, Co. Down.

Many most interesting and historic castles were still in great danger, e.g., Harry Avery O'Neill's Castle, and the Stewart Castle at Newtownstewart, Co. Tyrone, and several crumbling strongholds in Counties Armagh and Fermanagh, and along the Co. Antrim coast.

Among church and abbey remains that had so suffered, though since protected, were those at Maghera, Co. Down; Aghalurcher, near Lisnaskea, Co. Fermanagh; and at Dungen, Banagher, and Bovevagh, Co. Derry. Many others were in danger.

(3) *Injury or destruction through partial or complete rebuilding.* This still occurred, though not so often as in previous centuries, when, for example, Lisgoole Abbey, near Enniskillen, had been completely, and Enniskillen castle largely, destroyed, by successive partial rebuildings.

It was almost universal as regards such few mediæval churches as remained in use.

(4) *Injury by wilful defacement*, usually through ignorance and mischief. A horrible recent case was the wanton defacement of some carved figures on the beautiful O'Cahan Monument in Dungiven Priory, by mischievous boys who had since been convicted and punished.

But there might be many undetected cases.

(5) *Injury through injudicious repair or restoration*. This was not unknown, even in recent times, e.g., Grey Abbey, Co. Down, had suffered seriously in this way.

Other repairs and restorations had also been severely criticised.

(6) *Excavation by insufficiently trained excavators*. This could be remedied only gradually (a) by a stricter control of excavation, and (b) by the systematic training of excavators in connexion with the Universities and Schools of Archæology.

(7) *The destruction, pilfering, or scattering of finds*.

(8) *Disfigurement by secular or religious advertisement, or by the proximity of unsightly buildings*.

(9) *Fantastic and erroneous interpretation of puzzling antiquarian features*, such as the striking but baffling carved patterns on prehistoric stone structures in Co. Tyrone.

The Ancient Monuments Act of 1926, sought to provide a remedy for some of these evils; but for others one had to look to the growth of interest in, and knowledge of, antiquities, and to the vigilance and activity of individual antiquaries and societies.

The situation and character of many natural and antiquarian treasures in Northern Ireland, the dangers to which they were exposed, and the scope they offered for work by local societies, were then demonstrated county by county on a large specially prepared map of the Six Counties, and illustrated by over a hundred lantern slides, many shown for the first time, from the collections of the Belfast Museum, Mr. and Mrs. A. A. Campbell, Messrs. A. M'I. Cleland, A. R. Hogg, T. E. Osborne, R. J. Welch, and the President.

The huge systems of ancient hill forts and entrenchments across south Down and Armagh, including the Great Wall of Ulidia, and their relation to the natural defences of

that area, were indicated on the map, and their historical importance illustrated. These counties had many other fine prehistoric antiquities, besides most interesting churches, crosses, abbeys and castles.

Co. Fermanagh had important cliff caverns, once inhabited by man, a great number of crannogs, a splendid stone circle at Wattle Bridge, near Castle Saunderson, several fine old Christian ecclesiastical remains on islands, and many forts and castles, generally needing protection. Co. Tyrone had immense numbers of prehistoric remains, several splendid carved crosses, and some important castles in serious danger. Co. Derry had several most interesting mediæval churches, as at Maghera, Banagher, Bovevagh, and Dungiven, early saints' tombs and crosses, besides many prehistoric antiquities, and some good seventeenth century castles. Co. Antrim had splendid antiquities of all epochs, including some very early human settlements by the seashore, a huge number of earthen and stone forts, many fine souterrains, some important crannogs, some early church sites and fine round towers, a stately mediæval church at Carrickfergus, two great historic castles at Carrickfergus and Dunluce, with the remains of many smaller ones, mostly along the coast and urgently needing repair and protection.

Concluding, the President pointed out that the saving of the natural and antiquarian treasures of Ulster was a matter of national urgency, and concerned the reputation of their country. To continue to neglect them would be to betray both those who had gone before and those who were to follow them. Nor was there much good in asking people to come to Ulster if there was nothing of interest left to show them.

Science, though so different in its branches, was really one, and must be united, as the members of the Field Club were, in a spirit of good comradeship, without self-seeking or self-advertisement, the workers in one branch supporting those in others, and rejoicing in their successes.

Recalling how he had listened as a lad in that hall to some of the great scientists of the Club in the past, botanists like Stewart, geologists like Wright, and others, modestly showing the results of their long lives of patient work, done entirely for the love of knowledge, he felt it was the bounden duty of all who venerated their work and memory to do all

in their power to assist in the preservation and study of the natural and antiquarian heritage of Ulster, to which their great predecessors had devoted their lives.

He trusted too that the venerable and still beautiful, though rather neglected, old building in which they met, which was hallowed by the memory of those great, self-sacrificing, and devoted workers of the past, would never be debased to unworthy uses, but continue, as always, the home of science and culture, and worthy of those splendid men who had given dignity to their Society by the extent, and the value, and the devotion of their labour.

ILLUSTRATIONS.

The lantern views included the following *inter alia*:
Co. Down.

Geology.

Scrabo: Basaltic Dyke in Triassic Sandstone. (Needing protection.)

Rostrevor, Cloughmore: Glacial Erratic. (Defacement by inscription. Needing protection.)

Antiquities.

Grey Abbey: Several. (Defacement by injudicious repair.)

Sketrick Castle. (Dilapidation through neglect.)

Annadorn: Dolmen. (Attempted deliberate destruction, accidentally frustrated.)

Struell Holy Wells. (Decay from neglect. Since repaired.)

Ballynoe Stone Circle. (Needing protection.)

Dundrum Castle. (Military dismantling, with decay from neglect.)

Maghera: Cashel, Church and Round Tower site. (Destruction from neglect.)

Slieve Croob: Legananny Dolmen. (Endangered by road proximity; needing protection.)

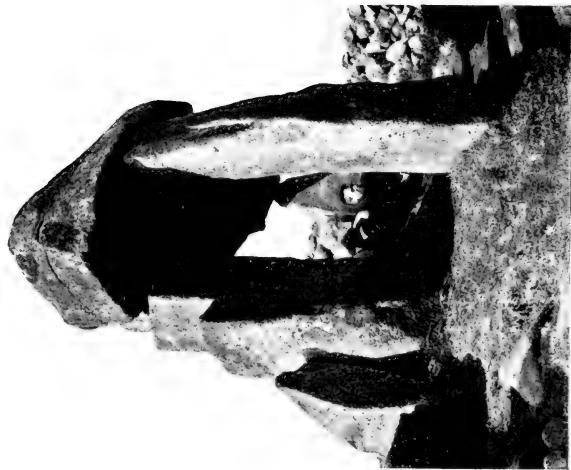
Kilkeel: Dolmen. (Do.)

Kilkeel: Kistvaen. (Building proximity; perhaps needing protection.)

Castlewella, Dromena: Ancient Stone Fort and Souterrain. Recently repaired by B.N.H. & P. Society. (Needing protection.)

Kilbroney: Old Church and two early Crosses. (Do.)

Hilltown: Goward Dolmen. (Endangered by road proximity; needing protection.)



End View.



Side View

PHOTOS: BY R. J. WELCH.

LEGANANNY DOLMEN, CRATLIEVE MOUNTAIN, DRUMGOOLAND, CO. DOWN.

Height 10ft. Cap, 11ft. 4ins. x 5ft. x 1ft. Sins.



Co. ARMAGH.

Antiquities.

Killeavy: Early Church.

Kilnasaggart: Early cross-inscribed Stone in pre-historic cemetery. (Needing protection.)

Navan Fort.

Tynan Village: Ancient Cross.

Tynan Abbey, Island: Ancient Cross.

Co. FERMANAGH.

Geology.

Marble Arch and Boho Caverns in Carboniferous Limestone, with underground rivers.

Lower Lough Erne: Knockmore Cliffs, with caves containing human remains. (Needing protection.)

Zoology.

Lower Lough Erne bank, near Ely Lodge.

Antiquities.

Lisnaskea: Aghalurcher ruined Church. (Dilapidation through neglect, and tree and ivy growth. Urgently needing care.)

Lisgoole Abbey, near Enniskillen. (Destruction through several rebuildings.)

Belmore Mountain: Cruciform Chambered Carn. (Needing protection.)

Boho: Ancient Cross. (Do.)

Kesh: Stone Circle in Deer Park. (Do.)

White Island Church: Early Christian Stone Figure. (Do.)

Inismacsaint: Ancient Cross.

Devinish: Abbey and Round Tower, under repair.

Devinish: Finial converted into Cross. (Injudicious restoration.)

Crevinish and Portora Old Castles. (Dilapidation from neglect; needing protection.)

Enniskillen: Maguire's Castle. (Disfigurement by partial rebuilding; needing protection.)

Christian Shrine found in Lough Erne.

Co. TYRONE.

Geology, Botany, and Zoology.

The Sperrins and Lough Fea. (Awaiting survey.)

Zoology.

Pearls from Tyrone rivers.

Antiquities.

Cecil Manor, near Augher: Knockmany Carn, with Stones inscribed with prehistoric decorative patterns. (Needing protection, and great caution in investigation and interpretation.)

Donaghmore Cross

Arboe, near Cookstown: Cross

(Both these fine carved Crosses were under Government care.)

Newtownstewart: Dolmen. (Unprotected.)

„ Henry Avery O'Neill's Castle

„ Stewart Castle

„ Old Bridge

(Serious dilapidation through neglect. All urgently needing protection.)

Baronscourt: Dolmen.

„ Old Castle.

Co. DONEGAL.

Antiquity.

(Just across the Border) Grianan of Aileach.

Co. DERRY.

Botany.

Culbane, near Toome: Diatomaceous Clay.

Antiquities.

Cumber: Plantation Castle. (Adjoining road. Unprotected.)

Banagher: Ancient Church with early doorway, etc. (Dilapidation through neglect. Protected. Adjoining structures needing protection.)

Dungiven: Priory, with Tomb of the O'Cahan. (Dilapidation through neglect. Tomb recently deliberately injured by young vandals. Under Government care. Needing more protection.)

Bovevagh: Old Church and Saint's Tomb. (Much dilapidated through former neglect. Under Government care.)

Maghera: Old Church and finely carved W. Doorway. (Dilapidation through former neglect. Under Government care.)

Camus on Bann: Old Carved Cross Shaft. (Formerly used as a gate post. Since rescued. Much defaced by neglect.)





CO. ANTRIM.

Geology.

- Giant's Causeway: Storm at the Stookans. }
 Whitepark Bay, Portbradden: Chalk Cliffs } (Sea
 Ballycastle Bay in a storm. } Erosion.)
 Benmore (Fair Head) from N. Star Dyke.
 „ „ Great block talus under cliff wall.
 Loughaveema: The Vanishing Lake.

Antiquities.

- Dunluce Castle. (Partial destruction through erosion and neglect. Urgently needing repair and protection.)
 Dunseverick Castle. (Do.)
 Benmore (Fair Head) Lough na Crannagh. Crannog on a rocky island. (Unprotected.)
 Glenaan. So-called "Ossian's Grave." Megalithic Monument. (Under Government care.)
 Kells: Templemoyle Abbey. (Scandalous case of defacement and desecration. Urgently needing protection.)
 Larne: Olderfleet Castle. (Serious dilapidation through neglect and road proximity. Urgently needing protection.)
 Templepatrick: Castle Upton. Mausoleum, by Adam. In danger from neglect.)
 White Abbey: The last of the Abbey. (Almost total demolition for road metal, through ignorance.)
 Carrickfergus Castle. (Serious injury through modern alterations. Needing protection.)
 „ Church, interior: Chichester Memorial.
 Carnmoney: Dunanney Fort. (Needing protection owing to proximity of the city.)

N.B.—Several of the above mentioned antiquities have come under Government care since November, 1927.—
 R.S.L.

(i) EARLY DAYS IN THE B.N.F.C.

(ii) HUNTING SEMPERVIVUMS.

The second ordinary meeting of the Winter Session was held in the Museum, College Square North, on Thursday, 15th December, 1927, when Dr. R. Lloyd Praeger, B.E., M.R.I.A., delivered a lecture on the above subjects. Mr. R. S. Lepper (President) occupied the chair.

(i) EARLY DAYS IN THE B.N.F.C.

Dr. Praeger said that 1926 was the jubilee of his election as a member of the Club, which he joined in 1876 at the age of eleven years. But the time he wished to speak about was the years following 1884, when he was elected on the committee, and shortly afterwards became secretary, and took part in all the Club's activities. At that time almost all of the Club builders were in their prime. Ralph Tate had gone to Australia, and W. T. Chew, the author of the letter first suggesting the formation of the Club, had dropped out; but S. A. Stewart, Joseph Wright, Wm. Swanston, Canon Grainger, W. J. Knowles, W. A. Firth, and John Vinycomb were all in the prime of life, and much good work was being done, especially in palæontology, botany and archæology. Taking as a standard of activity the scientific appendices to the Club's Proceedings, we find that an average of three were being turned out each year at that time: in the first twenty years of the Club's existence they averaged one per annum; that rate had declined very much since, although the amount of material requiring study was nearly as great as ever. In those days again, in addition to a full programme of summer excursions and winter meetings, there were occasional dredging expeditions, fungus forays (still, he believed, held sometimes) and special investigations such as those on the gravels of Larne and of Ballyrudder, and the cranogs of Lough Mourne. Lady members took an active part in the work of the Club—both field work and the reading of papers—as many as three ladies contributing papers during one session. He spoke especially of the fine spirit of comradeship and helpfulness that characterized those early days, and of the warm encouragement given to a young member like himself: also of the enthusiasm which forbade the abandoning of any arranged excursion no matter how inclement the weather might be; of this he gave some

amusing instances. Many of those who joined the Club on its formation in 1863, and who did splendid work for it and for science, remained honoured members throughout a long life. He thought that, at the Club's Jubilee in 1913, one of the most inspiring sights, and one which much impressed the delegates from societies in England, Scotland, and Ireland, was the fine muster on the platform of original members of the Club, come to celebrate their fifty years of membership.

In the old days work was carried out with the aid of slow trains, slower wagonettes, or, more often, long tramps, often with a heavy load. Now, motors brought them in a few hours to distances then undreamed of, and the country for fifty miles round lay almost at their doors. A largely increased membership—thrice the membership of the eighties—supplied an abundance of human material, and an almost infinite amount of research waited to be done. He trusted and believed that the old spirit of work for work's sake, of enquiry for the sake of truth alone, and of the comradeship which was so conspicuous a feature of old days in the Club, were all maintained as vigorously as ever. Of recent developments in the Club, the most interesting and hopeful was the Junior Section, to whose excellent work he bore testimony, and he hoped that the scientific interest of the young people would be enlisted for serious work as they grew older.

(ii) HUNTING SEMPERVIVUMS.

The lecturer said that his second paper, though it bore a title very different from the first, might logically be considered a sequel to it. The two together might be entitled "The Earlier and Later Work of a Field Club Member," for it was the training which he received in the Belfast Club that led to his undertaking the work of which he was about to speak. Some five years ago he was invited by the Royal Horticultural Society of London to prepare an illustrated account of the Sempervivums or House Leeks. That group had a very bad name among botanists and horticulturists. No genus well-known in gardens was in such a confused and misnamed condition. He began by getting together a large collection of living plants from gardens, public and private, throughout Europe—some 2,000 pots of hardy sempervivums, and 300 pots of tender plants. This study showed that the method of approach was a mere blind alley. It became evident that hybridization was common,

and that the different forms of certain variable species had become crossed until all diagnostic boundaries were lost. It was necessary to begin at the other end—to study and collect the plants in their native habitats. The sempervivum group has a peculiar and well-marked distribution. The hardy species, of which the well-known *S. tectorum* is typical, are spread across the mountains of central and southern Europe from the Pyrenees to the Caucasus, one outlying form, *S. atlanticum*, occurring in the Great Atlas in northern Africa. This group, to which some 200 species have been credited, has been grossly inflated; it really consists of not more than 20 to 25 good species, which produce various natural varieties and hybrids. The larger tender section belongs to north African and the Atlantic islands, and is concentrated in an extraordinary way in the Canary Islands, to which over 50 of a total of about 60 species are confined. Some account of collecting and studying the sempervivums was then given. Work began in Switzerland, which is an ideal country for botanical diversions, on account of its excellent tourist organisation, and the abundance of transport and of hotels. The Swiss sempervivum flora was easily collected, and some useful studies made of natural hybrids, which abound there. The Canary Islands were visited next. Here the problem is very different. The plants are spread over seven islands, distant 50 to 100 miles from each other: the majority of the species are confined to one island, sometimes to a single locality. There are very few roads, and still fewer inns, and the ground is mostly mountainous and very rough. The islands are of volcanic origin, formed largely of lavas and cinders, without a continuous covering of vegetation and often without soil. The slopes are mostly extremely steep, and are seamed with precipitous gorges often 1,000 or 2,000 feet deep. Across much of this country occasional rough and dangerous mule tracks are the only alternative to climbing. The sempervivums grow mostly on the cliffs, and are often inaccessible; but a series of bamboo alpenstocks, with screwed ends for attachment to each other and a hooked knife at the apex, proved very useful for collecting. Three months spent in traversing all seven islands in 1924, on motors, on mules, on camels, or on foot, resulted in large collections. A second visit of four months was made in 1927, when the phenomena of hybridity, which is frequent among the Canarian Sempervivums, were specially studied. As a result, all but about five out of a total of some 60 species were obtained alive, including five species new to science, as well as a large number of new hybrids.

The Balkan Peninsula also needed a visit, for its sempervivum flora is quite different from that of Switzerland. Dr. Praeger had the good fortune to visit the region with Mr. Turrill, of Kew Gardens, who is making a special study of the flora, and, accompanied and aided by two excellent Bulgarian botanists, Prof. Stojanoff and Mr. Stefanoff, extensive travelling, or horseback or on foot, among the Bulgarian mountains was carried out. Some account of the exigencies of travel in this region was given. As a result, all the plants of that area, which the lecturer considers to be good species, were collected and brought home for cultivation. The net result of the work described is that the complicated group of the Canarian Sempervivums is now thoroughly understood, and the species have been described and drawn; with a little further work at the European plants, it will be possible to present to the Horticultural Society the report which they invited.

Dr. Praeger was cordially thanked for his interesting addresses, by the President and several members.

WAS DARWIN RIGHT?

There was a large attendance at the third ordinary meeting of the Winter Session, held in the Museum, College Square North, on Saturday evening, 7th January, 1928, when Dr. Richard Hunter, M.D., M.Ch., F.Z.S., gave a lecture on the above subject. The President (Mr. R. S. Lepper) occupied the chair.

Dr. Hunter began with a critical survey of the story of creation as given in the Hebrew Scriptures, and pointed out that if this story be accepted in a literal sense, then, we must look for **not** one, but several Adams and Eves to account for the variations in colour and form of the different races of the world. If, however, the story be accepted as a beautiful allegory, then he did not see any reason why it could not be incorporated into the theory of evolution as first expounded by the great Charles Darwin. The lecturer then proceeded to elaborate this theory, and showed by many examples the close relationship which existed between man and ape. The most convincing of these arguments included: the blood test, by means of which the blood of any animal could at once be placed within the group to which the animal belonged; the blood of man showed the same reactions as that of the chimpanzee and the orang-utan, and to a lesser degree with the blood of the lower monkeys. The apes suffered from the same blood diseases

as man, and certain of these diseases could not be communicated to any other animal. The apes and man shared the distinction of stereoscopic binocular vision; of the same number and type of teeth; and the same plan of hair tracts on head, body and limbs. These close similarities could not be explained in any other way than the fact of a common ancestor, that both ape and man sprang from a common stock away back in the dawn of the world's history. The fossil ancestral form, it was stated, was found in the mountain valleys near the Gobi Desert, and early types of the human species were found in waves of culture passing from this neighbourhood, south, east and west. It was to the credit of the western wave that the origin of agriculture was given, and this was said to have taken place for the first time in the world's history in or around Mesopotamia. This discovery at once led to a complete change in the outlook of the people, and instead of wandering from valley to valley, they settled down in permanent communities, and from these the early cultures and civilisation of the near east evolved. It was for this reason that the Garden of Eden was believed to have been situated in Mesopotamia, and for the placing there of the Biblical origin of man, not because Adam was the first man or Eve the first woman, but because they represent that primitive tribe of people who took the first great step in the foundation of a settled people and of civilisation. The first people who lived by the "sweat of their brows" and by the fruits of their own labour, in a garden.

An animated discussion followed.

MODERN SEED TESTING.

The fourth ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday, 31st January, 1928, when Professor S. P. Mercer, gave a lecture on the above subject. The Vice-President (Mr. D. J. Carpenter, A.R.C.Sc.L.) occupied the chair.

Professor S. P. Mercer said:—

"In view of the fact that she is pre-eminently an agricultural country it is perhaps not surprising that Ireland, before any other part of the British Isles, provided herself with a seed control laboratory, and began to take a maternal interest in the seed sown by her sons. Even so, Great Britain as a whole was very late in the European list. It is not generally realized that as early as 1816 one state—Switzerland—had legislation governing her seed trade, and,

it may be remarked, took rather startling reprisals against any defaulter. Our modern penalties are somewhat more refined; we rely upon the salutary effect of publicity and, to our credit be it said, have seldom cause to invoke it.

“Seed testing upon organised lines in Europe owes its inception to the late Moller Holst. His writing resulted in the first officially recognised laboratory, under Dr. F. Nobbe, at Tharandt in Saxony. Its value was quickly appreciated, and a chain of stations rapidly arose, at Copenhagen (directed by Holst himself), Debreczen, Zurich, Wageningen, Hamburg and other centres, British laboratories following during the first decade of the present century. The functions of the modern seed testing station are curiously varied, but they all arise out of two apparently simple propositions, namely, how many plants, of what kinds, will be produced by a given quantity of the sample, and what proportion of the sample is not live seed at all. But in order to answer these questions fully, many side issues must be explored. A prominent one immediately appears. If the analyst is to say what kind of crop will be produced he must not only identify the crop seeds present as well as all weed seeds, but must determine the variety or varieties represented among the cultivated species. This may be easy, it may be difficult, and it may be impossible. An interesting case is furnished by varieties of white clover. The agricultural value of the clover sold as Wild White is much greater than that of the cultivated or Dutch form. But no visible differences between the seeds are constant. Differences are recognisable, in average cases, in size, weight, shape, chemical constitution and species of weed with which they are associated, and commonly the analyst must make use of all these in forming his opinion, sometimes discounting the indication afforded by one character, in view of another. The explanation of the relative agricultural values probably is that each so-called strain is actually a mixture of genetical strains, some short-lived, others long-lived, and that the short-lived strains predominate in one type, but long-lived strains in the other.

“Supposing the identity of the main bulk to be satisfactorily established it is next necessary to identify the extraneous species present. In the main these will be of two groups—useful species and weeds. The former will usually present no particular difficulty, although certain cases are ticklish. It is by no means simple, for instance, to discriminate between two common species of meadow grass, the rough stalked and the smooth stalked, although their

agricultural values are widely different. It is done by examination, under the microscope, of the minute teeth which adorn the lateral ribs of the inner of the two papery scales which enclose the kernal. A rather trying operation! In a general way if the analyst is familiar with some couple of hundred species of weed seed, he will recognise practically all those likely to be met in commercial seed. It is, however, not generally realized how many weeds there may be in a quite small percentage by weight, and herein lies one of the weaknesses of current seed testing practice. Some weed seeds are very tiny. A very common example is mouse-eared chickweed—a cosmopolitan species familiar to all farmers and gardeners. A one per cent. contamination with this species means no less than 35,000 seeds to every pound of the sample. It is lucky that mouse-eared chickweed is an easy plant to destroy!

“ All organic constituents of the sample being identified and their proportions determined, it remains to ascertain how many of each kind will grow. This is not quite the same as saying how many are alive, for there are numerous reasons which may cause a live seed to fail to grow. Clovers and other leguminous sorts furnish an obvious example. Plants of this tribe commonly produce a proportion of seeds with skins impervious to water. These are almost invariably alive, and will grow at once if the skin is pierced so as to allow ingress of water. The cause of this so called hardness of the seed coat is a fascinating problem which is not solved with certainty even now, though numerous workers have investigated it during the last three or four decades. It is probably due to external deposition of a cuticle on the surface of the normal seed coat during ripening. Such seeds can be rendered immediately useful by scarification, and even if untreated they gradually become porous; but it may be a very long time before they do so. One botanist found that only about 80 per cent. of the hard seeds in a mass of red clover he tested softened during 40 years' continuous soaking.

“ Besides this, disease, internal damage or architectural derangement may result in failure to germinate. Moreover, it does not follow that even those seeds which produce good seedlings in the laboratory will furnish plants in the field. There are so many destructive factors there for the delicate plantlet to contend with, quite apart from the lack of the encouraging conditions provided by a laboratory test, which must be very strongly felt by the weaker individuals among the embryos. A general opinion of the

vigour, as apart from the numerical capacity for germination, exhibited by a sample is formed by the speed with which the seedlings appear in the germinator, and observation of this is an important part of the analyst's test. For it is always found that the inhibitive effect of sowing in soil is proportionately greater the further one descends in the scale of laboratory germination, as well as, of course, in the scale of vigour.

"The age to which seed may live is still problematical, but there is good evidence that some species can live a hundred years. More than this is very unlikely, and the stories of living mummy wheat taken from Egyptian tombs are merely fables. As to what constitutes death, who shall say? That problem will remain a mystery until we know the nature of life."

A keen discussion followed, in which Miss Sayers, Messrs. J. A. S. Stendall, A. M'I. Cleland, H. Cowie, A. H. Davison, and A. E. Muskett took part.

A vote of condolence was passed with the relatives of the late John Vinycomb, an honorary member of the Club.

SOAP BUBBLES AND RELATED TOPICS.

The fifth ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday evening, 21st February, 1928, the President (Mr. R. S. Lepper) in the chair, when Mr. C. R. Nodder, M.A., was the lecturer.

The lecturer illustrated, by reference to a soap-bubble, a number of the more important properties of very thin films, explaining the causes of the colours seen in a bubble, and its spherical shape. Experiments were conducted to show that the pressure in a small bubble is greater than the pressure in a large bubble. This was illustrated in a striking way by inflating a rubber balloon and tossing it into the air; as the balloon deflated it was seen to dash about with ever-increasing vigour. The state of tension which exists at the surface of a liquid was explained, and it was pointed out that the wetting of a solid by a liquid was largely influenced by the magnitude of this tension. The importance of the resistance to wetting of many animal and plant structures was illustrated by reference to the mosquito larva, the water-spider and the waxy covering of the leaves of many plants. The manner in which "wettability" is involved in methods adopted to combat various pests was discussed.

The rapid death of flies and other insects on which a drop of petrol was placed was explained as due to the ease with which the liquid spread all over the surface of the animal, blocking the spiracles or breathing-pores. Reference was made to the importance of surface-tension in the preparation of various emulsions used to destroy plant pests. It was also pointed out that in preparing Burgundy mixture, from bluestone and lime, for combating such pests as potato blight it was important to carefully adjust the proportions of the ingredients in order to obtain a liquor which most easily wetted the surface of the leaves. The production of foam on the sea by the action of saponins derived from decaying sea-weed, and the manner in which an oil film acts in hindering the formation of ripples on water were discussed. It was pointed out that the absence of ripples reduced the friction between the sea and the air, thus hindering the production of large waves by the action of the wind, and rendering the waves less liable to break. Finally, the bearing of surface tension on the phenomena of the rainbow and thunderstorms was referred to.

An interesting discussion followed.

THE MOON.

The sixth ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday evening, 6th March, 1928, the President (Mr. R. S. Lepper) in the Chair, when Mr. Charles E. Kerr, B.A., F.R.S.A.I., gave a lecture on the above subject.

The lecturer stated that the most interesting body in the sky for the average person—with the possible exception of the sun—is the moon. Its importance is due to its propinquity, because in itself it is a relatively trivial heavenly body. But its proximity to us causes us to notice and to experience many effects in our everyday life. It provides us with moonlight, and runs through its series of phases thirteen times in the year, thus forming thirteen lunar months. As the earth travels round the sun, so it in turn travels round the earth, and so we see more or less of the side illuminated by the sun, and hence the phases. If its path and the earth's were in the same plane once every month (lunar) it would obscure the sun, and we would experience a solar eclipse, and once every month it would pass through the shadow of the earth, and we would experience a lunar eclipse, but its plane being slightly tilted these spectacles occur at rarer intervals. The gravitational pull of the moon draws towards it the

mobile waters of the ocean and the phenomenon of tides occurs. The earth being drawn away from the waters on the opposite side of it leaves these waters heaped up also, and we get the opposing high tide. The helping pull of the sun causes spring tides, and its pull when at right angles (first and last quarter) causes the moon's effect to be lessened, and neap tides result.

With the fine photos at his disposal the lecturer then displayed and explained some of the more interesting features of the moon's surface. The great ringed plains such as Plato, with walls rising thousands of feet above them. The great craters with central peaks rising out of the almost level plain within them, and terraces rising in succeeding steps to the great peaks of the crater rim, and outside sloping gradually down to the outer plain with vast ridges of lava. Tycho Brache, Copernicus, Kepler, Archimedes, Alphonsus, Ptolemaus, Arzachel Bullialdus, and many others, with diameters ranging up to 100 miles and walls of 12,000 feet in some instances.

In the great mountain ranges—the Appenines, the Alps, the Caucasus—peaks of over 20,000 feet occur, and these ranges skirting as they do the lunar “seas” make fine spectacles in a telescope. By the length of the shadow of the peaks and the altitude of the sun for that particular place on the moon we can calculate the heights.

The craterlets or smaller craters—the crater pits or rimless craters—the vast valleys such as the great Alpine Valley—the tremendous clefts in the surface of the moon. perhaps of similar nature to the American canyons, and illustrated most markedly in the Hyginus Cleft—the ridges skirting or traversing the seas—the bright ray systems extending around Tycho, Copernicus, Kepler and many other craters—were each in turn dealt with and beautifully illustrated by the real astronomical photos shown in the lantern.

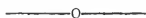
The question of the absence or presence of water, air, and vegetation is one yet to be finally decided. A thin atmosphere with traces of water vapour are thought by some to exist, and seasonal changes suggesting vegetation have been noted by Prof. Pickering. The alternative theories regarding the formation of the craters were dealt with.

In the ensuing discussion many interesting points were raised—e.g., the composition of the material giving forth the bright rays on Tycho, &c.; the evolution of the moon; the question of temperature during the night and day; the presence of water, air, and life.

The lecture was followed by a discussion, and many questions were put to the lecturer.

BEAUTIFUL WILD AND CULTIVATED GARDENS OF IRELAND.

The seventh ordinary meeting of the Winter Session was held in the Museum, College Square North, on Tuesday, 20th March, 1928, the President (Mr. R. S. Lepper) in the Chair, when Mr. R. J. Welch, M.Sc., M.R.I.A., gave a lecture on the above subject, illustrated by a large series of specially prepared lantern slides.



ANNUAL MEETING.

The Annual Meeting was held in the Museum, College Square N., on Tuesday, April, 1928, at 8 p.m., the President (Mr. R. S. Lepper) in the chair. The following Reports were presented:—

ANNUAL REPORT.

Your Committee has pleasure in submitting this the Sixty-fifth Annual Report.

The Club has lost by death during the year, 2 Honorary Members, W. J. Knowles, M.R.I.A., F.R.S.A.I., and John Vinycomb, M.R.I.A., F.R.S.A.I. Four Ordinary Members have died, and 27 have resigned.

Forty-three Ordinary Members and Thirty-eight Junior Members have been elected, the membership now standing as follows:—8 Honorary, 2 Corresponding, 2 Life, 602 Ordinary and 133 Junior Members, thereby making a total of 747.

Nine Committee meetings have been held, the attendances of the Members being as follows:—

Robert Bell	...	5	R. S. Lepper	...	9
S. A. Bennett	...	0	Rev. W. B. Megaw	...	2
A. A. Campbell	...	4	A. E. Muskett	...	8
D. J. Carpenter	...	6	C. R. Nodder	...	7
E. N. Carrothers	...	9	J. Orr	...	7
C. D. Chase	...	4	T. Edens Osborne	...	0
A. M'I. Cleland	...	7	Miss W. J. Sayers	...	8
W. M. Crawford	...	8	J. Skillen	...	6
A. H. Davison	...	8	J. A. S. Stendall	...	9
Dr. Deans	...	1	G. Steven	...	0
C. E. Kerr	...	3	R. J. Welch	...	6

Eleven Field Excursions were organised during the summer. These were well attended, an outstanding feature being the success of the two evening excursions conducted to places of interest near at hand.

Belvoir Park (evening)	...	...	24th May, 1927.
Slieve Croob	...	...	4th June.
Rademon Demesne (half day)	...	...	18th June.
Cavehill (evening)	...	...	28th June.
Charlemont, Moy and Benburb	...	...	2nd July.
Londonderry, Inishowen, &c. (three days)	...	...	11-13th July.
Carrickfergus (half day)	...	...	23rd July.
Knockmany and Clogher	...	...	6th August.
Giant's Causeway (half day)	...	...	20th August.
Coleraine and Mountsandal	...	...	3rd September.
Ballydrain (half day)	...	...	24th September.

Reports of the various sectional activities will be placed before you, and will appear in the *Proceedings*.

On Tuesday, 25th October, the Annual Conversazione was held in the Assembly Hall, Fisherwick Place. It was very well attended, and 41 of our members staged excellent exhibits of great interest. In this connexion the Junior Section was outstanding, the quality of the display speaking very highly for the keenness and vigour evident in that Section.

During the Winter Session 7 meetings were held, and in nearly all cases the lectures arranged for these meetings were illustrated by excellent lantern views, the operating of the lantern being in the capable hands of Mr. A. R. Hogg. The various lectures, abstracts of which will appear in the *Proceedings*, were as follows:—

1927.

15th November	...	" Presidential Address."
15th December	...	" Early Days in the B.N.F.C."
		" Hunting Sempervivums."
		R. Lloyd Praeger, D.Sc., M.R.I.A.

1928.

7th January	...	" Was Darwin Right?"
		R. Hunter, M.D., M.Ch.
31st January	...	" Modern Seed Testing."
		Prof. S. P. Mercer.
21st February	...	" Soap Bubbles and Related Topics "
		C. R. Nodder, M.A.
6th March	...	" The Moon." C. E. Kerr, B.A.
20th March	...	" Beautiful Wild and Cultivated Gardens of Ireland."
		R. J. Welch, M.Sc., M.R.I.A.

The Diamond Jubilee Celebrations of the Cardiff Naturalists' Society were held in November last, and the Club was represented by Mr. A. H. Davison, who attended as its official delegate.

During the year a sub-committee has been formed to arrange for the carrying out of a regional survey of Portmore and district, and another has been set up for the purpose of investigating and stimulating the formation of local societies in Northern Ireland.

The Libraries, Museums and Art Committee of the Belfast Corporation has accepted with grateful acknowledgement the offer of the Club's Library, its Herbarium, and its collection of Erratic Rocks, as a gift, to be housed in the New Museum and Art Gallery.

We regretfully announce that Mr. T. Edens Osborne, an Honorary Member of the Club, so well known to us for four years as our Honorary Treasurer, has been compelled to resign his office as an Ordinary Member of Committee on account of ill health, and we wish him speedy recovery.

It yet remains for us to thank those who during the year have helped so much towards ensuring the success of the Field Excursions. To J. H. Burke Murphy, Esq., J.P., we are indebted for permission to visit Belvoir Park, while the visit to Rademon was made possible through the kindness of Colonel Sharman Crawford. The delights of the Armagh excursion were added to by the kindness of His Grace the Primate, who revealed to our members the treasures of his Palace and its grounds, and of Mr. James Lennon, Town Clerk of Armagh. To the Mayor and Corporation of Londonderry, the Very Rev. the Dean of Londonderry, Dr. Farren, President of St. Columb's College, and the Rev. P. C. Duncan, M.A., Rector of Carndonagh, are due our very best thanks for the kindness they showed in adding to the success and interest of the three days excursion. At Carrickfergus it was the Town Clerk, Mr. David Law, who explained to us the town's treasures, and the Archdeacon of Down (Rev. F. J. M'Neice, B.D.) who so lucidly told us of the history of its Church of St. Nicholas, and we thank them. Messrs. S. Henry and S. D. Glassey earned our indebtedness for the role they played in the excursion to Coleraine and Mountsandal, and we thank Canon Bradley and Mr. D. H. Christie, Chairman of the Urban Council, for their services on that occasion. The fungus foray to Ballydrain was made possible by the kindness of John B. Morrison, Esq., who

gave us permission to explore his grounds. Our thanks are due to the Press for publishing accounts of our activities throughout the year and to the Great Northern Railway Co., the London, Midland and Scottish Railway Co., and the Co. Down Railway Co. for travelling facilities afforded in connexion with our Field Excursions.

R. S. LEPPER, *President*.

A. E. MUSKETT

E. N. CARROTHIERS

Hon.

Secretaries.

DECEASED MEMBERS.

D. Elliott, B.A., J.P.

W. J. Knowles, M.R.I.A., F.R.S.A.I.

Alfred Russell.

James Tate, M.P.S.I.

James Thompson.

John Vinycomb, M.R.I.A., F.R.S.A.I.

HONORARY LIBRARIAN'S REPORT.

During the year the Committee decided to hand over the Library to the Corporation on the opening of the new Museum and the possible closing, so far at least as concerns the Field Club, of the Old Museum. In its new quarters the Library will prove more readily useful to members, and one very great advantage will be that the numerous and valuable exchange proceedings of other clubs and societies will be bound, and so made much more easy of access.

The list of exchanging societies will be found on page 500.

It contains three new names—the Leeds Philosophical and Literary Society, the Manchester Geological Association, and the San Diego (California) Society of Natural History.

W. M. CRAWFORD, *Hon. Librarian*.

REPORT OF HON. RECORDING SECRETARY.

The year 1927 was, on the whole, rather backward. March was mild, but very wet and sunless. Plants had made average progress up to the end of the month, and the early migrant birds—Chiffchaff and Sand Martin—arrived some days earlier than in 1926. April, however, was an exceptionally cold month, in which much damage was done to fruit blossom, and the progress of nature was retarded.

Winter Heliotrope was reported in flower near Belfast on 15th January, Marsh Marigold at Sixtowns on 27th February, Wood Anemone near Belfast on 17th March, and Hawthorn blooms at Bangor on 10th May.

The following are records of the arrival of spring migrant birds:—Chiffchaff, 20th March, Belfast. Sand Martin, 29th March, Portglenone; 7th April, Belfast; 26th April, Coleraine. Wheatear, 28th April, near Belfast. Willow Warbler, 18th April, Castlereagh Hills; 20th April, Killaloo, Co. Derry; 24th April, Newtownbreda; 26th April, Coleraine. Swallow, 18th April, Belfast; 20th April, Carrickfergus; 26th April, Rostrevor; 3rd May, Killaloo; Corncrake, 17th April, Gilford; 18th April, near Belfast; 3rd May, Killagan; 3rd May, Sixtowns; 7th May, Killaloo. House Martin, 7th May, Belfast. Cuckoo, 18th April, Killagan; 26th April, Carrickfergus; 1st May, Sixtowns; 4th May, Rostrevor; 24th May, Killaloo. Swift, 30th April, Belfast; 1st May, Sixtowns; 9th May, Rostrevor. Common Tern, 24th May, Belfast. Spotted Flycatcher, 26th May, Belfast; 29th May, Killaloo.

An invasion of common Crossbills took place during the summer months, in common with that which occurred in Great Britain. The birds were reported from many localities, flying about in small flocks and feeding in fir plantations. On 3rd August a specimen of the rare Two-barred Crossbill (*Loxia leucoptera bifasciata*) was obtained from a flock near Crumlin, Co. Antrim. Whether the remainder of the flock was wholly composed of Two-barred or in the main of the common species is not known, but it is probable the Two-barred formed but a small proportion. According to subsequent reports the specimen referred to is the only British record for 1927 (see *Irish Naturalists' Journal*, vol. I, page 255, and *British Birds*, April, 1928). It is interesting to note that the first record of the Two-barred Crossbill in the British Isles is dated 11th January, 1802, when a specimen was taken near Belfast.

The finding of the semi-parasitic Yellow Bartsia (*Bartsia viscosa*) by Mr. George Barnett, at Sixtowns, Co. Londonderry, places a new species on our northern flora list.

A Rust fungus (*Coleosporium euphrasie* Wint.), present on the leaves of this plant, was submitted to the British Museum, the authorities of which state it is the first recorded instance of this parasite attacking *B. viscosa*.

J. A. SIDNEY STENDALL, *Hon. Recording Secretary*.

REPORT OF BOTANICAL SECTION.

This Section had four excursion last summer:—

(1) To the bog between Ballygrainey and Donaghadee, when Mr. Carrothers, Sen., showed us Marsh Andromeda (*Andromeda polifolia*), now unfortunately disappearing in that locality.

(2) To Magheramorne, and (3) to Castle Espie, conducted by Capt. Chase.

(4) Along with the Archaeological Section, to Dundrum sandhills, where we found *Erodium moschatum*, *E. cicutarium* and *E. maritimum*, and also Oyster Plant (*Mertensia maritima*).

43 members paid their subscriptions, and the average attendance at excursions was about 20.

Postage and excursion expenses came to £2 15s 1d; subscriptions amounted to £2 3s 0d, which leaves a balance in hand of £2 16s 7d, as against £3 8s 8d last year.

C. D. CHASE,	} Hon.
W. J. SAYERS,	
	} Secretaries.

REPORT OF GEOLOGICAL SECTION.

The Section made four excursions during the Session to the following places:—Islandderry, near Dromore; Barney's Point, Islandmagee; Knockadona and Brookmount, near Lisburn; and Ballylumford, Islandmagee. In addition, the Club made a general geological excursion on 20th August to the Giant's Causeway, and also, as an outcome of the Club's excursion to Slieve Croob and Legananny on 4th June, a private excursion was made on 17th September to the granite quarries on the slopes of Cratlieve, which time did not permit the members to visit on 4th June.

All the above excursions proved of great interest, good specimens were collected, and excellent photographs secured.

At Islandderry there is an old quarry in which rhyolite is well exposed on either side of a small stream flowing east and west through the quarry. The exposure on the north side of the stream is clearly seen rising through beds of Silurian grit, part of the exposed face of the rhyolite showing distinct impressions made by the Silurian grit on the plastic igneous material, while at the same time the grit has become much indurated. On the south side of the stream the rhyolite is seen resting against the Silurian beds. The

rhyolite on this side of the stream is distinctly more granular and crystalline than that on the north side, the latter appearing to be more fluidal in character.

Specimens of rhyolite in contact with the Silurian grit were exhibited at the *Conversazione*.

This quarry is referred to in Geikie's "Ancient Volcanoes of Great Britain," vol. 2, p. 429.

Barney's Point is well known to the Field Club, and has been visited several times by the Geological Section for the purpose of examining the very fine display of Liassic beds exposed on the shore at low water. On the occasion of the Section's last visit the following were found:—

Upper Cretaceous:—*Rhynchonella robusta*; *Belemnites mucronata*.

Lower Liassic:—*Pinna folium*; *Cardinia Listeri*; *C. ovalis*; *Ammonites Johnstoni*; *A. angulatus*; *Gryphea incurva*; *Lima punctata*; *L. gigantea*; *Ostrea Liassica*; *Cidaris Edwardsii*; *Pentacrinus scalaris*; *Terquemia arietes*; *Montalivaltia Haimeii*.

The visit to Knockadona (old Kilcorrig) chalk quarry proved particularly interesting, as there is now revealed a very good section showing the old land surface conditions of the chalk before the outpouring of lava which now covers it. From this section some fine blocks of lignite (parts of a tree, somewhat elliptical in section, measuring 16 ins. x 8 ins. x 6 ins.) were obtained and exhibited at the *Conversazione*. A short illustrated and descriptive article on this quarry appeared in *The Irish Naturalists' Journal* for March, 1928 (Vol. 2, No. 2).

Brookmount esker was found to exhibit some very fine examples of glacial current bedding, with a wide range of erratics, including an interesting volcanic "bomb," the interior of which consisted of a clayey ochreous iron-ore.

Ballylumford is chiefly interesting on account of the remarkable display of interbasaltic beds exposed in the quarry, at one time worked for pisolitic iron-ore by the late Dr. Ritchie. This material was loaded into ships from a pier just above the upper ferry crossing Larne Harbour, the piles of which are still to be seen. The quarry has long been abandoned, and is much overgrown, but still affords splendid examples of the gradual passage of basalt through "pavement," "bole," and "lithomarge" into pisolitic iron-ore.

Subsequently various models of basaltic pillars were made from this material, with other similar material from the Causeway, and exhibited at the *Conversazione*.

When visiting the Causeway the attention of the geologists was drawn more particularly to the various points exhibited in the cliffs, as far as Pleaskin Head, rather than to the Causeway itself. The party was fortunate enough to come across a small exposure of lignite, with a small band of "white," basalt above it, which excited considerable interest.

With regard to the granite quarries at Legananny, the chief point of interest here was a basaltic dyke through the granite. The material was of a very dark green colour, with bands of yellow ochreous iron-ore on either side. The granite is entirely rotten, the quarry being worked as a "sand-rock" quarry.

ROBERT BELL	} <i>Hon.</i>
A. M'I. CLELAND	
	} <i>Secretaries.</i>

REPORT OF ZOOLOGICAL SECTION.

Owing to the paucity of members, the activities of the section have been for the most part collaborative, several joint excursions being held with the Junior and other Sections.

The proposed survey of Portmore Lake and district will result, it is to be hoped, in an increased membership, for a great deal of work will have to be done in order to make the list of the fauna of the district as complete as possible.

JAMES ORR, *Hon. Secretary.*

REPORT OF ARCHÆOLOGICAL SECTION.

The Archæological Section has a membership of sixty.

On 28th May, 1927, a visit was paid to Ballygally, on the Antrim coast road, where the cutting away of a bank for building purposes had exposed worked flints in considerable profusion. Fourteen members attended.

The Section inspected Dunannev, near Carnmoney, a fine example of a ring fort, on August 27th. Twenty-three members were present.

The last field meeting of the Summer Session was held at Dundrum, Co. Down, on September 10th, when, notwithstanding unfavourable weather conditions, a profitable time was spent at the prehistoric sites in the sandhills. The Botanical Section joined us, and there was a combined attendance of thirty-seven.

At Ballygally, Mr. Skillen, and at Dunanney and Dundrum, Mr. Bell, gave valuable assistance.

We close the year with a credit balance of £2 0s 5d.

A. ALBERT CAMPBELL. *Hon. Secretary.*

REPORT OF JUNIOR SECTION.

During the year 38 new members were elected, making a total membership at the end of the year of 133, which constitutes a record for the section.

Either alone or in conjunction with some of the other Sections, excursions to the following places were undertaken:—Belvoir Park, Purdysburn Glen, Larne, Rademon Demesne, Scrabo, Cavehill, Castle Espie, Carrickfergus, Crow Glen and Dundrum. The average attendance during the first part of the year was 45, but owing to bad weather conditions the average during the last few excursions was only 25. The numbers, however, prove that the interest kindled in the section has been well maintained.

For their assistance on three separate occasions I wish to thank Messrs. Stendall, Orr, and Skillen, and for his generous hospitality to the Juniors on the occasion of their visit to Scrabo, I desire specially to thank Mr. A. M'I. Cleland.

During the winter the experiment of giving the Juniors a number of special talks was tried. On the 3rd October Mr. J. Orr gave a talk on "The Teeth and Skulls of Mammals" (12 present); on the 21st February Mr. D. J. Carpenter gave one on "The Common House Fly" (25 present), and on the 20th March Mr. Stendall gave one on "Birds" (14 present). The number on the last occasion would probably have been greater had not the weather been exceptionally unfavourable. The talks were illustrated by specimens, and seem to have been appreciated, thus the experiment may be regarded as quite successful.

The prizes offered for competition had the effect of producing some good essays on bird life, and creditable collections of fossils and marine shells, while the exhibitions made by the Juniors at the Annual Conversazione excelled all former exhibits. Out of the 26 tables of exhibits eight were occupied by the Juniors, these including remarkably good collections of flint implements, fossils, marine shells,

pearls and precious stones, fungi, fruits in season, pond and other animal life. In this connexion the following deserve special notice:—Misses A. Crawford, N. Fisher, B. E. and A. Glendinning, J. Loewenthal, L. M'Keown, and N. Stendall; also Masters J. Blair, A. and R. Macdonald, and J. M'Williams.

Our credit balance at the beginning of the year was £1 11s 6d, subscriptions (including £2 2s 0d from the Club) £3 12s 0d, and our expenditure £4 7s 6d, which leaves a credit balance of £0 16s 6d. Considering the great increase in the numbers, the number of the summer excursions, the innovations of winter talks, etc., and the consequent much increased postage, which comprises the main bulk of the expenditure, the account is in quite a satisfactory condition.

After 3 years' experience with the section I would strongly recommend that the Juniors should pay an annual subscription of 1/- up to the age of 18 years.

This small amount would not deter anyone really interested from joining the section, and the non-payment of the subscription would automatically remove anyone who might be indifferent.

D. J. CARPENTER, *Hon. Secretary.*

Dr. **Hon. Treasurer's Account for the Year ending 31st March, 1928.** Cr.

Balance from year 1926.27	£88 15 8	Expenses of Conversazione	£14 14 3
Subscriptions received, including arrears—493 at 5/-	123 5 0	Advertising of Conversazione	2 11 3
Subscriptions paid in advance for year 1928.29—		Postage	28 17 1
24 at 5/-	6 0 0	Hire of Museum Rooms	8 10 0
38 Entrance Fees at 5/-	9 10 0	Hire of Lantern	7 0 0
Balance from Excursions	9 10 7	Printing and Stationery	42 12 3
Affiliation Fee Route Naturalists' Field Club	0 5 0	Subscription to "English Naturalist"	0 15 0
British Association Guide (Belfast)	0 2 0	Affiliation Fee "Irish Naturalist Journal" for 1926.27	3 0 0
		Fire Insurance	0 10 0
		Gratuities	1 12 6
		Addressing Circulars, etc.	11 0 6
		Grant to Junior Section	2 2 0
		Incidental Expenses:—Files for Correspondence and Receipts, Club Prize, Foolscap	2 5 6
		Balance carried forward to next Account	111 17 11
	£237 8 3		£237 8 3

Audited and found correct. Balance in hands of Honorary Treasurer—One hundred and eleven pounds, seventeen shillings, and eleven pence.

April 13th, 1928.

(Signed) A. ALBERT CAMPBELL
THOMAS EDENS OSBORNE.

The following office-bearers were elected for the Session 1928-29:—President, D. J. Carpenter; Vice-President, Miss W. J. Sayers; Honorary Secretaries, E. N. Carrothers and A. E. Muskett; Honorary Treasurer, Alex. H. Davison; Honorary Librarian, W. M. Crawford; Honorary Recording Secretary, J. A. S. Stendall; Honorary Secretaries of Sections—Botanical, C. R. Nodder; Geological, Robert Bell and A. M'I. Cleland; Zoological, J. Orr; Archæological, J. Skillen; Junior, Mrs. C. R. Nodder; Ordinary Members of Committee (retire 1929), S. A. Bennett, S. Freeland, J. R. H. Greeves (retire 1930) Miss M. W. Rea, Rev. W. R. Megaw, R. J. Welch; (retire 1931) A. A. Campbell, C. D. Chase, R. S. Lepper.

CLUB MEDALLISTS.

- 1923. William Swanston, F.G.S.
- 1924. Nevin Harkness Foster, F.L.S., M.R.I.A.,
- 1925. Nathaniel Carrothers.
- 1926. Robert Bell.
- 1927. R. Lloyd Praeger, D.Sc., M.R.I.A.

Dr. R. Lloyd Praeger, who joined the Club in 1876 for two years, and re-joined in 1883, served as a member of Committee from 1885 to 1894, and was Honorary Secretary from 1890 to 1893. In the 1913-14 Session he was Vice-President, and served as President for the two years 1914-1916.

He has been responsible for the compilation of five scientific Appendices to the Club's Proceedings, one jointly with the late W. H. Phillips, and one with the late S. A. Stewart. In addition, he has read over twenty papers before the Club, the first being in 1885.

Dr. Praeger has figured pre-eminently as a Field Botanist for a long period, and his writings concerning plant distribution in Ireland are regarded as standard.

LIST OF EXCHANGING SOCIETIES.

1925-26 1926-27 1927-28

1	—	—	Belfast—Committee of Public Museum and Art Gallery.
1	—	1	Committee of Public Libraries.
1	—	—	Natural History and Philosophical Society.
1	1	1	Presbyterian Historical Society of Ireland.
1	1	1	Birmingham—Natural History and Philosophical Society.
1	—	—	Bournemouth—Natural Science Society.
—	1	1	Brighton and Hove—Natural History and Philosophical Society.
1	1	1	Bristol—Naturalists' Society.
1	—	1	Cardiff—Naturalists' Society.
1	1	1	Chester—Society of Natural Science, Literature and Art.
1	1	1	Dublin—Royal Irish Academy.
1	1	1	Royal Society of Antiquaries, Ireland.
—	—	—	Royal Zoological Society of Ireland.
1	—	1	Dumfriesshire and Galloway—Natural History and Antiquarian Society.
—	—	—	Dundalk—County Louth Archæological Journal.
—	—	—	Eastbourne—Natural History, Photographic and Literary Society.
1	—	—	Edinburgh—Geological Society.
1	1	1	Essex—Field Club.
—	1	1	Glasgow—Royal Philosophical Society.
—	—	—	Halifax, Nova Scotia—Institute of Science.
—	—	1	Hertfordshire—Natural History Society and Field Club.
1	1	1	Isle of Wight—Natural History Society.
—	1	1	Leeds—Philosophical and Literary Society.
—	—	—	Leyden—Rijks Ethnographisch Museum.
—	1	1	Liverpool—Geological Society.
—	—	1	Naturalists' Field Club.
—	—	1	London—British Association.
—	1	—	British Museum.
1	1	1	Geologists' Association.
1	1	1	Linnean Society.
—	—	1	Manchester—Geological Association.
—	—	1	Microscopical Society.

1925-26 1926-27 1927-28

1	1	1	Marlborough College—Natural History Society.
—	—	—	Mexico—Instituto Geologico.
—	—	—	Newcastle-upon-Tyne—Natural History Society of Northumberland, Durham and Newcastle-upon-Tyne.
—	1	—	Norfolk and Norwich—Naturalists' Society.
—	1	1	North Staffordshire—Field Club.
—	—	—	Norwich—Prehistoric Society of East Anglia.
1	—	—	Oxford—Ashmolean Natural History Society.
—	1	1	Perthshire—Society of Natural Science.
1	1	—	Stavanger—Staats Museum.
1	1	1	Toronto—Royal Canadian Institute.
1	1	1	Torquay—Natural History Society. U.S.A.
—	1	1	Boston, Mass.—Society of Natural History.
—	—	1	Chicago—Academy of Sciences.
1	1	1	Field Museum of Natural History.
—	—	1	John Crerar Library.
—	1	—	Cincinnati—Lloyd Library.
—	1	1	Madison, Wis.—Wisconsin Academy of Sciences, Arts and Letters.
1	1	1	Milwaukee, Wis.—Public Museum.
—	—	1	New York, N.Y.—Academy of Sciences.
1	—	1	Philadelphia—Academy of Natural Sciences.
1	—	—	Portland, Maine—Society of Natural History.
—	1	—	Rochester, N.Y.—Academy of Science.
1	1	1	St. Louis, Mo.—Missouri Botanical Garden.
1	1	1	San Francisco, Cal.—California Academy of Sciences.
—	1	1	Staten Island, N.Y.—Institute of Arts and Sciences.
—	—	—	Tuft's College, Mass.—Eaton Memorial Library.
1	1	1	Washington—U.S. Geological Survey.
1	1	1	Government Printing Works.
1	1	1	National Museum.

RULES

OF THE

Belfast Naturalists' Field Club.

As amended at Annual Meeting held 21st April, 1925.

I.

That the Society be called "THE BELFAST NATURALISTS' FIELD CLUB."

II.

That the object of this Society be the practical study of Natural Science and Archaeology in Ireland.

III.

That the Club shall consist of Ordinary, Junior, Life, Corresponding, and Honorary Members. Not more than twenty-five Ordinary Members shall be elected half-yearly. Ordinary Members shall be proposed and seconded by two existing Members on a Nomination Form to be obtained from the Honorary Secretaries. These proposals shall come before the Committee of the Club, who shall vote by ballot for or against acceptance. The names of the accepted candidates shall be submitted for election half-yearly—at the Annual Meeting in April and the Annual Conversazione in October.

Ordinary Members shall pay annually a subscription of Six Shillings, and shall on election pay an Entrance Fee of Five Shillings. Members who are twelve months in arrear in their subscriptions shall not receive any further circulars or other printed matter, and those who are two years in arrear shall cease to be members of the Club.

That the composition fee for Life Membership be Four Guineas.

Junior Members, who must be between the ages of twelve and twenty-one years, may be elected at any Meeting of the Club, and shall not be required to pay any Annual Subscription from twelve to eighteen; from eighteen to twenty-one they shall pay an Annual Subscription of Two Shillings and Sixpence, which shall be wholly used for the benefit of the Junior Section. Junior Members shall not receive any printed matter except the usual notices; shall not have the power to vote; and shall not borrow books from the Club's Library without special permission from the Librarian. On attaining their majority they shall become Ordinary Members, and shall pay an annual subscription of Six Shillings (6s).

IV.

That the Honorary and Corresponding Members shall consist of persons of eminence in Natural Science, or who shall have done some special service to the Club; that such Members may be nominated by any Member of the Club, and on being approved by the Committee, may be elected at any subsequent Meeting of the Club by a majority of the votes of the Members present. That not more than two Honorary Members be elected in any one year. That Corresponding Members be expected to communicate a paper once within every two years.

V.

That the Officers of the Club be annually elected and consist of a President, Vice-President, Treasurer, Librarian, one or two Secretaries, and a Recording Secretary, together with the Secretaries of the various Sections of the Club. That the office of President or that of Vice-President shall not be held by the same person for more than two years in succession. That the President, Vice-President, General Secretaries, and Treasurer be *ex-officio* members of Sub-Committees.

VI.

That the General Committee shall consist of the above-named officers with nine ordinary members of Committee, and shall hold at least eight meetings during the year; five persons to form a quorum.

That three ordinary members of Committee shall retire annually in order of seniority, those retiring being ineligible for re-election for one year. Should any ordinary member of Committee fail to attend at least three of the Committee meetings held during the year his or her place may be considered vacant and another member elected to fill the position. No ordinary member of Committee shall hold the post of Secretary in any of the Sections. That in the event of a vacancy occurring in the General Committee a new member may be co-opted to fill such vacancy for the remainder of the year.

That nominations for ordinary members of Committee shall be sent in writing to the Secretaries on or before the 21st day of March in each year. That the privilege of nominating members of Committee shall be held by all Ordinary and Life Members of the Club. That the names of those members so nominated shall be published on the circular convening the Annual Meeting, at which the Ordinary Members of Committee shall be elected by ballot. That should the necessity arise the retiring members of Committee shall be balloted for.

VII.

The Committee may from year to year appoint Sectional Secretaries and Committees, as may be considered desirable, to further original investigations in any one or more departments of the Club's work. Members desiring to join any Section shall pay an additional subscription of One Shilling to the Secretary of the Section (such subscription to be used for the benefit of the Section). No financial responsibility to be incurred by any Sectional Secretary, Sectional Committee, or any Officer of the Club without the previous approval of the Club's Committee. The Junior Section to have a Committee composed of Six Members of the Club, the Chairman to be annually appointed by the General Committee.

VIII.

That the members of the Club shall hold at least Six Field Meetings during the year, in the most interesting localities, for investigating the Natural History and Archaeology of Ireland. That the place of meeting be fixed by the Committee, and that five days' notice of each Excursion be communicated to Members by the Secretaries. That each of the Sectional Secretaries shall be made responsible for the running of one Regular Excursion, the programme to provide study in the subject appertaining to the Section, and that any additional Special Excursions shall be arranged by the Secretaries of the Sections concerned.

IX.

That regular Monthly Meetings be held during the Winter Session from November till April, inclusive, for the purpose of reading Papers; such Papers as far as possible to be original, and to treat of the Natural History and Archaeology of the district. That the Papers to be read be secured by a Standing Organising Committee, consisting of the Hon. Secs. of the Club, together with the Sectional Secretaries and a Chairman. That between the Regular Monthly Meetings of the Club Special Meetings open to all Members of the Club may be held, at which Papers of specialised interest would be discussed. That the Sectional Secretaries shall each be responsible for the providing of a programme for one Regular and one Special Meeting, one Regular and one Special Meeting to be arranged by the Hon. Secs. Any extra Meetings shall be arranged by the Organising Committee, if desired. That the programme for the Winter Session shall be completed by the date of its First Meeting and issued to all Members. That each notification announcing a Regular Meeting or Excursion shall also serve to notify Members of the next Special Meeting or Excursion.

X.

That the Committee shall, if they find it advisable, offer for competition Prizes for the best collection of scientific objects of the district; and the Committee may order the purchase of maps, or other scientific apparatus, and may carry on geological and archaeological searches or excavations, if deemed advisable, provided that the entire amount expended under this rule does not exceed the sum of £10 in any one year.

That the General Committee may offer from time to time such prize or prizes as they may deem desirable for competition among Schools in or near Belfast.

XI.

That the Annual Meeting be held during the month of April, when the Report of the Committee for the past year, and the Treasurer's Financial Statement shall be presented, the Committee and Officers elected, Bye-laws made and altered, and any proposed alterations in the general laws, of which a fortnight's notice shall have been given, in writing, to the Secretary or Secretaries, considered and decided upon. The Secretaries to give the Members due notice of each intended alteration.

XII.

Members of other Irish Field Clubs, residing temporarily or permanently in or near Belfast, may be enrolled as Members of the Club without election or entrance fee on production of a voucher of membership of another Club, and without subscription for the current year, on production of a receipt showing that such subscription has been paid to another Club. Failing the production of such receipt, the usual subscription for the current year to be paid to the Treasurer on enrolment. The names of Members so admitted to the Club to be published with the notice of meeting following the date of their enrolment.

XIII.

That, on the written requisition of twenty-five members, delivered to the Secretaries, an Extraordinary General Meeting may be called, to consider and decide upon the subject mentioned in such written requisition.

XIV.

That the Committee may be empowered to exchange publications and reports, and to extend the privilege of attending the Meetings and Excursions of the Belfast Naturalists' Field Club to Members of kindred societies, on similar privileges being accorded to its Members by such other societies.

RULES FOR THE CONDUCTING OF EXCURSIONS.

I. The excursion to be open to all Members, each one to have the privilege of introducing two friends. The time for commencing as many as possible of the Half-day Summer Excursions to be not prior to 2 p.m.

II. A Chairman to be elected as at ordinary meetings.

III. One of the Secretaries to act as Conductor, or, in the absence of both, a Member to be elected for that purpose.

IV. No change to be made in the programme, or extra expense incurred, except by the consent of the majority of the Members present.

V. No fees, gratuities, or other expenses to be paid except through the Conductor.

VI. Every Member or Visitor to have the accommodation assigned by the Conductor. Where accommodation is limited consideration will be given to priority of application.

VII. Accommodation cannot be promised unless tickets are obtained before the time mentioned in the special circular.

VIII. Those who attend an excursion without previous notice will be liable to extra charge, if extra cost is incurred thereby.

IV. No intoxicating liquors to be provided at the expense of the Club.

LIST OF MEMBERS

For the year ending 31st March, 1928.

Any Change in the Address of Members should be at once notified to the Honorary Secretaries.

The Dates prefixed to Members' names signify date of Election.

Honorary Members.

- 1893. Bell, Robert, 64 Newington Avenue.
- 1892. Carrothers, Nathaniel, 145 Stranmillis Road.
- 1914. Charlesworth, Professor John K., D.Sc., Ph.D., F.G.S., Queen's University, Belfast.
- 1926. Foster, Rev. Canon George, B.D., Strangford.
- 1866. Swanston, W., F.G.S., Farm Hill, Dunmurry.
- 1902. Scharff, Robert F., B.Sc., Ph.D., F.L.S., M.R.I.A., F.R.S.A.I., Knockranny, Bray, Co. Wicklow.
- 1880. Welch, R. J., M.Sc., M.R.I.A., 49 Lonsdale Street.

Corresponding Member.

- 1923. The Honorary Secretary of the Route Naturalists' Field Club.

Life Members.

- 1903. Stelfox, A. W., A.R.I.B.A., M.R.I.A., 14 Clareville Road, Rathgar, Dublin.
- 1893. Wilson, Alec G., J.P., M.R.I.A.

Ordinary Members.

- 1923. Acheson, F. W., 37 Osborne Park.
- 1924. Acheson, Miss R., Bayview, Larne Harbour.
- 1927. Adair, W. R., Breezemount, Donaghadee.
- 1921. Adams, John, Auburn, Cranmore Park.
- 1915. Aird, Hugh, 10 King Street.
- 1917. Alderdice, R. Sinclair, F.C.I.B., 12a Linenhall Street.
- 1922. Alexander, K. M., 30 Kelvin Parade.
- 1923. Anderson, Hugh, Knocknagoney, Martinez Avenue.
- 1911. Anderson, Miss S. M., 4 Church View, Holywood.
- 1892. Andrews, Miss E., 10 Park Crescent, Tonbridge, Kent.
- 1912. Andrews, Miss E. L., Inla, Comber.
- 1922. Andrews, J. D., Uraghmore, Comber.
- 1912. Andrews, Dr. Marion B., D.P.H., Orsett, Derryvolgie Avenue.
- 1913. Andrews, Michael C., M.R.I.A. do.
- 1927. Annesley, Frazer M., 1 Armagh Terr., Portadown.
- 1924. Arbuthnot, Miss D. Moya H., 9 Cranmore Park.
- 1926. Archer, Miss Eva, 43 Central Avenue, Marlborough Park.
- 1921. Ardis, R., A.M.I.E.E., 6 Marine Parade, Holywood.

1921. Ardis, Harold, 6 Marine Parade, Hollywood.
 1923. Armour, W. S., 5 Crescent Gardens.
 1916. Armstrong, Miss Dorothy, M.Sc., Corlea, Somerton Road.
 1923. Armstrong, Miss Gertrude, Cloughfern, Islandmagee.
 1927. Armstrong, J. I., B.Sc., Students' Union, Queen's University.
 1921. Ashworth, Rev. A. O., Marsdene, Cyprus Park, Bloomfield.
 1921. Ashworth, Mrs., do.
 1927. Bailey, C. S., Methodist College.
 1916. Baillie, Robert, Elleslie, Ravenhill Park
 1922. Baird, Sir R. H. H., K.B.E., D.L., Park Lodge, Antrim Road.
 1927. Baker, Geo. Edgar, Lismacue, Belmont Road.
 1927. Bateman, J. V., 2 Haywood Avenue, Ormeau Road.
 1927. Beatty, Miss Vera, 82 University Street.
 1924. Beatty, C., J.P., Ledlie Villa, Coalisland.
 1921. Beaumont, Ivor, A.R.C.A., M.S.A., F.R.S.A., F.I.B.D.,
 Municipal College of Technology.
 1905. Beck, Miss, 1 Derryvolgie Avenue.
 1925. Beckett, John, 7 Alameda Terrace, Falls Road.
 1928. Bell, N. G., The Hut, Whitehouse.
 1913. Bell, D. M., Bloomfield, Bryansford, Co. Down.
 1923. Bell, David S., High Street, Carrickfergus.
 1896. Bell, E. George, Solitude, Lurgan.
 1922. Bell, John, 10 Garfield Street.
 1926. Bennett, Mrs. Eva, 9 Ashfield Drive, Glandore Avenue.
 1908. Bennett, S. A., B.A., B.Sc., 184 Waterloo Road, Burslem,
 Stoke-on-Trent.
 1922. Berringer, Joseph, 36 North Street.
 1924. Berry, Col. R. G. J. J., M.R.I.A., F.R.S.A.I., Ardaluin, New-
 castle, Co. Down.
 1914. Bird, Miss, 18 Connaught Mansions, Prince of Wales Road,
 Battersea Park, London, S.11.
 1928. Black, Miss Josephine, 15 College Gardens.
 1924. Black, Robert A., Landscape Terrace, Crumlin Road.
 1923. Black, A. Hamilton, 5-11 Callender Street.
 1898. Blackwood, Miss Sarah, 6 College Green.
 1922. Blackwood, Reginald W. H., J.P., 24 University Square.
 1923. Blair, John T., 33 Ophir Gardens.
 1921. Blair, Mrs. J., 557 Oldpark Road.
 1925. Blair, John H., 34 Derryvolgie Avenue.
 1925. Blair, Mrs. Elizabeth, do.
 1921. Bloom, H. M., The Hermitage, Marino.
 1921. Bowman, Miss A., 1 Rossmore Avenue.
 1925. Bowman, Miss Jeannie, 25 Mountview Street.
 1922. Bowman, Robert R., 2 Osborne Drive, Bangor.
 1923. Boyd, Miss K. St. Clair, Chatsworth, University Road.
 1922. Boyd, J. St. Clair, do.
 1923. Boyd, James, Raleigh House, Queen Street.
 1924. Boyd, Richard R., 2 Alliance Avenue.
 1893. Boyd, Miss E. S., 5 Rozel Terrace, Mount Durand, Guernsey.
 1894. Boyd, W. C., J.P., Thornhill, Farnham Road, Bangor.
 1916. Bradley, Miss L. T., Haypark House, Knock
 1926. Bradshaw, D. B., Provincial Bank House, Royal Avenue.
 1923. Breakey, Rev. J. C., B.A., The Manse, Comber.
 1928. Breakey, Miss M. L. C., 30 Camden Street.
 1923. Broomhead, H., Mount Oriel, Newtownbreda.
 1922. Brown, James R., M.A., B.Sc., 32 Maryville Park,

1928. Brown, Miss Ella K., Shore Road, Newtownards.
 1923. Brown, W. P., LL.B., Hon. Irish Society's School, Coleraine.
 1883. Brown, Thomas, J.P., 102 Donegall Street.
 1923. Buckley, Miss, 4 Erin View, Greencastle.
 1921. Bulla, A. Crennell, Rydal, Lisburn Road.
 1923. Burns, Miss E., 13 Ponsonby Avenue.
 1899. Burrowes, W. B., F.R.S.A.I., Ballynafeigh House.
1927. Cairns, Hugh, B.Sc., Mountcairn, Comber.
 1926. Calvert, Jos., 49 Brookland Street.
 1909. Campbell, John, Albert Brickworks, Carrickfergus.
 1917. Campbell, James, Jennymount Mill.
 1921. Campbell, A. Albert, F.R.S.A.I., Drumnaferrie, Rosetta Park
 1921. Campbell, Mrs. A. Albert, do.
 1921. Campbell, Mrs., 20 Wellington Park Avenue.
 1927. Campbell, Miss H., Methodist College.
 1891. Capper, J. Malcolm, 14 Linenhall Street.
 1923. Carpenter, D. J., A.R.C.Sc.L., 278 Cliftonville Road.
 1925. Carlile, Miss Maria B., 198 Ravenhill Road.
 1904. Carmody, The Very Rev. W. P., M.A., Donwpatrick.
 1923. Carrothers, E. N., L.M.S. Railway, York Road.
 1914. Carter, Charles S., 25 Donegall Street.
 1892. Carson, J. C., 8 Wellington Place.
 1922. Cassidy, Wm., 6 Bawnmore Road.
 1926. Charley, E. J., J.P., Seymour Hill, Dunmurry.
 1919. Chase, Capt. C. D., M.C., M.A., Campbell College, Belmont.
 1926. Chase, Miss Bessie, 226 Stranmillis Road.
 1907. Chambers, W., 35 Cranmore Avenue.
 1920. Chandler, W. P., 1 Ailsa Terrace, Strandtown.
 1920. Chandler, Mrs. do.
 1901. Cheyne, H. H., Roseneath, Bangor.
 1922. Christy, Wm., 8 Edenderry Gardens, Tennent Street.
 1920. Churchill, Miss, Inverary, Sydenham.
 1922. Clarke, George W., M.B.E., 39 Adelaide Park.
 1925. Cleeland, Robert V., 13 Eglantine Gardens.
 1894. Cleland, Alex. M'I., 28 Green Road, Knock.
 1894. Cleland, Mrs. Annie, do.
 1890. Cleland, James A., Brooklyn, Holywood.
 1917. Close, R. M., M.R.I.A., 13 Donegall Square North.
 1925. Clouston, David, M.A., B.Sc., Queen's University.
 1925. Coates, Geo. D., Fruit Hill, Andersonstown.
 1922. Cole, Francis J., Ardmara, Greenisland.
 1928. Collins, Miss Nora, 42 Fitzwilliam Street.
 1923. Colton, John M., Lisbawn, Hawthornden Road.
 1925. Common, Robert H., Tynemouth, Larne Harbour.
 1922. Corry, Hon. Cecil, Castle Coole, Enniskillen.
 1924. Cosgrave, John, F.L.A.A., Alliance Avenue.
 1925. Cosgrave, Mrs. Magee, 49 Alliance Avenue.
 1921. Cousins, D., 4 Frederick Terrace, Malone Road.
 1923. Cowden, William, 46 Cliftonpark Avenue.
 1906. Cowie, James, 83 Osborne Park.
 1921. Cowie, Henry, L.M.S. Railway Co. (N.C.C.) Terminus, York.
 Road.
 1928. Crawford, J. C. C., Easthope, Bawnmore Road.
 1921. Crawford, W. M., B.A., F.E.S., F.Z.S., Orissa, Marlborough
 Park.
 1921. Crawford, Lieut.-Col. F. H., C.B.E., Cloreen, University Road.

1922. Cromie, A. G., Seeburg, Castle Avenue.
 1922. Cromie, Miss Maude, do.
 1922. Crothers, Miss, 7 Easton Crescent, Cliftonville Road.
 1921. Crymble, Mrs. S., 18 College Green.
 1913. Cunningham, Miss M. E., F.R.S.A.I., Glencairn.
 1884. Cunningham, Rt. Hon. Samuel, Fernhill.
 1915. Cunningham, Josias, R.N.V.R., M.B.O.U., Fernhill.
 1924. Cupples, Miss Diana, 124 Malone Avenue.
 1921. Cuthbert, Rev. A., M.A., Rocklands Manse, Carrickfergus.
1923. Dales, Miss M., 14 Easton Crescent.
 1924. Dallas, Miss, 2 Bloomfield Gardens.
 1923. Dalzell, John, 12 Derlitt Street, Ballynaveagh.
 1923. Davin, Miss Adelaide G., B.Sc., Glenmore Lodge, Lambeg.
 1921. Davison, A. H., F.A.I., 32 Wellington Place.
 1925. Dawson, Col. W. R., M.D., M.R.I.A., 26 Windsor Park.
 1921. Deane, Arthur, M.R.I.A., F.R.S.E., Art Gallery and Museum, Belfast.
1924. Deans, Samuel, B.Sc., Mayfield, Donaghadee.
 1919. Deans, T. M., LL.D., Academy House, Rosetta.
 1925. Deans, Samuel A., L.D.S., 141 Ormeau Road.
 1891. D'Evelyn, A. M., M.D., Ballymena.
 1925. Dickey, John, 71 Malone Avenue.
 1925. Dickey, Dr. Wm., 86 Antrim Road.
 1924. Dickie, Miss Cathleen, St. Brigid Studios, Holywood.
 1927. Dickie, Miss Sara W., 32 Mountcharles.
 1921. Dinsmore J. A. S., 28 and 30 Castle Place.
 1922. Dobbin, Miss, 60 University Street.
 1921. Doggart, Henry, 55 Rugby Road.
 1921. Donaldson, Dixon, Dunoon, Islandmagee, Co. Antrim.
 1922. Douglas, John, Helen's Bay.
 1923. Douglas, Miss E., Maternity Hospital, Belfast Union.
 1922. Downer, W. H. N., Chrome Hill, Lambeg.
 1923. Duff, Miss Mary, Aghalee, Lurgan.
 1908. Duncan, W., 54 Textile Buildings, Donegall Square South.
 1927. Dunne, Herbert Elsmere, 62 Victoria Road, Gt. Crosby, Lancs.
 1927. Dunne, Mrs. Edith Mary do.
 1928. Dunne, Thomas J., 65 South Parade.
 1921. Dunwoody, W. J., 10 Marine Parade, Holywood.
1921. Earls, Professor J., B.A., 31 Ravenhill Park.
 1925. Edgar, Miss Elizabeth, 30 Cyprus Avenue.
 1916. Edwards, Mrs., 54 Ulsterville Avenue.
 1923. Elliott, Miss Annie, B.A., Ardree, Bloomfield.
 1924. Elliott, Miss Isabel, Belfast Shorthand Inst., Royal Avenue.
 1925. Erskine, Miss Nessie, 6 Cedar Avenue.
 1927. Erskine, Miss Jeannie, 42 Botanic Avenue.
 1923. Ewart, Lavens M., The Banks, Ballyholme, Bangor.
 1927. Ewing, John, Saxonia, Strandtown.
1924. Fallon, Mrs., 25 St. James' Park.
 1925. Faulkner, John H., 19 Clifton Road, Bangor.
 1913. Ferguson, Samuel, St. Helen's, Holland Park, Knock.
 1924. Ferguson, Miss Elizabeth, 25 Sans Souci Park.
 1928. Ferguson, Miss Elizabeth, 52 Moyola Street.
 1924. Ferguson, Mrs. G. W., Carnamenagh, Antrim Road.

1926. Fernan, Charles, 79 Cavendish Street.
 1923. Fforde, Miss Georgina, Cloughfin, Islandmagee.
 1927. Field, Robert J., 791 Lisburn Road.
 1897. Finlay, Miss A. M., 3 Old Nichol Street, Bethnal Green, London, E.C.
 1927. Fisher, Ernest, Inisglas, Greenisland.
 1906. Finlay, Arch. H., A.C.G.I., A.I.E.E., Willesden, Holywood.
 1925. Forbes, James K., B.A., Coleraine Model School, Coleraine.
 1903. Foster, Mrs. N. H., Hillsborough.
 1911. Foster, Miss A. B., B.Sc., Y.M.C.A., William Street, Waterford.
 1923. Foster, A. R., B.A., Principal, Royal Academy, Cliftonville
 1924. Frame, Miss H., 26 Glandore Drive.
 1924. Frame, Miss M., do.
 1921. Freeland, Samuel, 23 Meadowbank Street.
 1892. Fulton, David, Arlington, Windsor Avenue.
 1921. Fulton, Wm., 44 Wellington Place.
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1924. Gallagher, James, 72 Martinez Avenue.
 1922. Gallway, W. H., Shielavon, Ranfurly Avenue, Bangor.
 1892. Gamble, Miss, Lorne, Craigavad.
 1927. Gardner, Miss E. R., 1 Wellington Park.
 1916. George, A. H., 22 Thorndale Avenue.
 1917. Gibson, Mrs., Bonnington, Lansdowne Road.
 1911. Gibson, Mrs. Joseph, Hollow Bridge House, Hillsborough, Co. Down.
 1921. Gibson, Samuel, J.P., Summer Hill, Dunmurry.
 1926. Gibson, Miss Annie B., 30 Green Road, Knock.
 1923. Gilchrist, David, 24 Ravenhill Park.
 1927. Gilliland, Robert H., 14 Sans Souci Park .
 1926. Gilliland, Mrs., 89 Malone Avenue.
 1921. Gilliland, W. T., B.Sc., 7 Wellington Place.
 1923. Gill, Miss Lillie, 16 Glendower Street.
 1924. Glasgow, Miss Margaret, M.Sc., High School, Sligo.
 1926. Glasgow, Henry L., Cookstown, Co. Tyrone.
 1921. Glendinning, R. G., Jun., Lennoxvale.
 1921. Gore, W., F.R.S.A.I., Municipal College of Technology.
 1921. Graham, Thomas, Ivy Bank, Salisbury Drive.
 1922. Graham, Miss M. E., 241 Sundridge Terrace, Mountpottinger.
 1924. Graham, Mrs. Sarah, 138 Dunluce Avenue.
 1928. Graham, Miss Joanna, Clondara, Martinez Avenue.
 1891. Green, Mrs. Isaac, Hawthornden, Knock.
 1895. Green, W. A., F.R.S.A.I., Dunmore, Antrim.
 1921. Green, H. P., Limehurst, Holland Park, Knock.
 1923. Green, R. W., Coondara, 41 Kingsmore Avenue.
 1920. Greenham, Miss J. C., 44 Orient Gardens.
 1923. Greer, Thomas, J.P., Curglasson, Stewartstown.
 1901. Greeves, J. Theodore, Nendrum, Knockdene Park.
 1917. Greeves, J. R. H., B.Sc., Coolnashee, Crawfordsburn.
 1918. Greeves, O. V., Tavanagh House, Portadown.
 1924. Gregg, Rev. W. J., B.A., 3 Cyprus Gardens.
 1923. Gregory, M. J., 25 Gresham Street.
 1926. Gribbon, John, 38 Lavinia Street, Ormeau Road.
 1924. Griffith, Henry A. C., Belleville, Cliftonville Road.
 1924. Griffith, Miss Grace A., do.
 1924. Griffith, Miss K. E., do.
 1923. Grimshaw, Reginald W., 13 Rossmore Avenue.

1926. Haffern, Wm., 33 St. Ives Gardens, Stranmillis Road.
 1926. Hale, Thomas, 5 Mervue Street.
 1926. Hall, Miss Janie M., 4 Glenbrook Terrace, Shore Road.
 1908. Hamilton, Miss, Melrose, Ardlee Avenue, Holywood.
 1923. Hamilton, Fred. M., 19 Windsor Park.
 1923. Hamilton, T. S., Presbyterian Church House.
 1928. Hamill, Miss Nana, 42 Sans Souci Park.
 1925. Hanna, Mrs. S. M., 31 Kelvin Parade.
 1920. Harbinson, Wm., Highbury, North Road.
 1924. Harbinson, Miss Margaret, Doonvarna, Lansdowne Road.
 1923. Harbison, Miss, Esplanade House, Whitehead.
 1926. Harris, J. B., 12 Ravenhill Gardens.
 1921. Hayward, H. Richard, Hopefield House, Antrim Road.
 1924. Head, Major Henry Nugent, The Downs, Newcastle, Co. Down.
 1921. Heenan, Miss J., 11a Stranmillis Road.
 1923. Henderson, J. A. D., 11 Norfolk Drive.
 1923. Henderson, Miss, 1 George's Terrace, Ballysillan.
 1915. Herdman, Miss E. W., Fountainville, University Road.
 1876. Heron, F. Adens, D.L., F.R.S.A.I., Maryfield, Holywood.
 1922. Heron, Mrs. Maryfield, Holywood.
 1922. Heron, Miss E. do.
 1922. Heron, Miss, Teagheen, Evelyn Gardens, Antrim Road.
 1921. Hewton, J., M.P.S.I., 315 Ormeau Road.
 1924. Hill, Miss Nellie, 136 Haypark Avenue.
 1922. Hill, Dr. S. W., 46 Pound Street, Larne.
 1905. Hobson, Mrs. Aitennach, Crawfordsburn, Co. Down.
 1927. Hodgson, Lionel C., M.A., 59 Wellington Park.
 1920. Hodgson, Mrs. do.
 1927. Hood, Miss Jane, 290 Antrim Road.
 1927. Hood, Alex., do.
 1921. Hoffman, F., Leamington, 7 Old Cavehill Road.
 1895. Hogg, A. R., 10 Thorndale Avenue.
 1908. Hogg, D. J., 16 Kansas Avenue.
 1903. Holland, Miss, Highbury, Cadogan Park.
 1904. Holland, Frank J., Fairyhill, Osborne Gardens.
 1928. Holmes, Miss Margaret, 8 Canterbury Street.
 1925. Holmes, Williams, Forth River P. E. School.
 1921. Holness, John J., 26 Ava Street.
 1923. Honeyburne, Miss Ella F., Fortwilliam, Antrim Road.
 1906. Hopkirk, F. C., Whitehouse Park, Whitehouse.
 1921. Hoskins, Miss M., 14 Rosetta Park.
 1914. Houston, James Dick, Northern Bank House, Kilrea, Co. Derry.
 1921. Houston, H. S., Slievemara, Jordanstown, Co. Antrim.
 1925. Houston, Dr. J. C., 90 Antrim Road.
 1926. Howard, S. R., 53 Donegall Place.
 1927. Hughes, Joseph, 28 Peel Street.
 1923. Hull, G. E., 36 Cliftonville Road.
 1922. Hunter, Dr. J. A., Hampton Cottage, Balmoral Avenue.

 1927. Ingold, C. Terence, B.Sc., Chorlton, Bangor.
 1923. Irwin, Wilson, Rossnall, Helen's Bay.
 1923. Iten, Mrs. 18 South Parade.

 1927. Jackson, James, Winona, Princes Gardens, Larne.
 1923. Jackson, M., Maze, Hillsborough.
 1923. Jamison, Oswald, 8 Mayfield, Bangor.
 1909. Jenkins, W. A., 6 Elmwood Terrace.

1925. Jennings, Victor G., Wellcroft, Sandown Road, Knock.
 1901. Johnson, Rev. W. F., M.A., F.E.S., M.R.I.A., St. Aidan's
 Rostrevor.
 1906. Johnston, F. W., The Cottage, Cultra.
 1924. Johnston, Henry, 40 Victoria Gardens.
 1923. Johnston, Miss Isa, 1 George's Terrace, Ballysillan.
 1921. Johnston, E. C., F.R.S.A.I., Lyncote, Helen's Bay.
 1923. Johnston, Miss Jean, Beechville, Glenburn Park.
 1916. Johnston, Miss M. B., do.
 1922. Johnston, Miss Minnie E., 25 Lonsdale Street.
 1925. Johnston, Mrs., 30 Sharman Road.
 1922. Johnston, T. J., Glenfinnan, Cable Road, Whitehead.
 1923. Johnstone, Miss Anna, Municipal College of Technology.
 1921. Jones, H. H., 4 Donegall Square N.
1924. Kearney, William, Dunraven, Donaghadee.
 1924. Keenan, Miss Mary, 98 Donegall Pass.
 1917. Keiller, W., 11 Chichester Street.
 1922. Keith, S. S., 20 Knutsford Drive, Cliftonville.
 1927. Kelly, Miss Eileen, 81 Belmont Road.
 1921. Kennedy, R. N., J.P., Avonmore Lodge, Balmoral.
 1923. Kennedy, Isaac, 294 Springfield Road.
 1922. Kerr, Charles E., B.A., Mount Carmel, Upper Newtownards
 Road.
 1927. Kerr, David S., 1 College Square E.
 1926. Kevin, Miss Kathleen, B.A., 144 Donegall Pass.
 1923. Kevin, Miss M., do.
 1922. King, Mrs. J., Castle Chester, Whitehead.
 1922. Kinkead, Geo. W., Cushendun, Co. Antrim.
 1886. Kirkpatrick, F., 27 Oxford Street.
 1923. Kitchen, Gilbert Ingram, 64 Roseleigh Street.
 1922. Knox, C. J., 9 Donegall Square S.
 1923. Knox, Joseph R., 11 Ailesbury Road.
 1925. Knox, Harry, 60 Henderson Avenue.
 1928. Knox, Miss Lily, 41 Cliftonville Road.
 1877. Kyle, R. A., 17 Wellington Park.
1923. Larmour, Miss Gertrude, 1 Brooklyn Villas, Ballyholme,
 Bangor.
 1926. Lauder, James, 18 Evelyn Gardens, Bloomfield.
 1923. Lauder, William, Public Library, Donegall Road.
 1920. Lavery, W. H., Glenwood, Bloomfield Road.
 1928. Lavery, Miss M. Beatrice, 27 Eglantine Avenue.
 1923. Lawlor, H. C., M.A., M.R.I.A., 14 Windsor Avenue.
 1923. Lawlor, Mrs. H. C., do.
 1925. Law, Miss Myn, 235 Ravenhill Avenue.
 1912. Ledgerwood, N. J., J.P., 10 Wellington Park.
 1920. Lepper, R. S., M.A., LL.M., F.R.Hist.S., F.R.S.A.I., Elsinore,
 Crawfordsburn.
 1922. Leetch, Miss Elizabeth, Cullybackey, Co. Antrim.
 1923. Leyden, Miss Margaret M., Belgrave, Bloomfield.
 1923. Leyden, William A., do.
 1926. Liggett, Miss Margaret M., 109 The Mount.
 1899. Lindsay, Professor J. A., M.D., M.A., F.R.C.P., 3 Queen's
 Elms.
 1915. Lindsay, Mrs., 3 Lower Crescent.
 1926. Livesey, H., Campbell College.

1922. Logan, James, M.A., F.R.G.S., Greystone, Ravenhill Park.
1921. Loughridge, James, 173 Cliftonville Road.
1918. Lowry, Miss, Hazelwood, Bloomfield.
1910. Lowry, Miss L., do.
1923. Lowry, James, Belfast Bank, Glenarm.
1893. Lowry, D. E., J.P., Oakley, Strandtown.
1908. Lowry, James, Llewellyn Avenue, Lisburn.
1924. Lynn, Miss M. J., M.Sc., Albany Cottage, Carrickfergus.
1926. Macdonald, David, Castle Road, Comber.
1915. Maconachie, Rev. D. H., B.A., B.D., The Manse, Holywood.
1915. Maconachie, Mrs., The Manse, Holywood.
1905. Macoun, Mrs. S. M., Clanrolla, Windsor Park.
1922. Magill, Hugh, 217 Cavehill Road.
1927. Magill, Mrs. Edith, 9 Wilmont Terrace, Lisburn Road.
1926. Maguinness, Miss Kathleen, 1 Jocelyn Street.
1920. Magowan, A., 2 Easton Crescent.
1921. Magowan, Mrs., do.
1924. Major, Miss Anna M., Ulai, Holywood.
1924. Major, Miss Olga, do.
1905. Malcolm, Miss Susan, Downshire Road, Holywood.
1921. Malcolm, Bowman, M.I.C.E., M.I.Mech.E., Inver, Ashley Park.
1901. Malcomson, Herbert T., M.B.O.U., 32 Arthur Street.
1880. Marsh, Mrs. Glenlyon, Holywood.
1922. Marshall, Rev. R. L., M.A., LL.D., Maghera, Co. Derry.
1922. Marshall, Miss M. E., 82 Ardenlee Avenue.
1924. Martin, Miss Helen, B.A., B.Sc., 40 Botanic Avenue.
1924. Martin, Miss Josephine C., 12 Glandore Avenue.
1923. Martin, Mrs. Kathleen R., Broomhill Park.
1924. Martyn, Douglas, 30 Orient Gardens.
1916. Masterson, Miss, 93 Wellesley Avenue.
1915. Mawdsley, Miss, 28 Green Road, Knock.
1908. Maxwell, Henry, Dunalbine, Deramore Park.
1923. Maxwell, Joseph, J.P., Fierna, Osborne Park.
1923. Maxwell, Miss F. E., do.
1925. Maxwell, Miss Isabella, 10 Luxor Gardens.
1927. Maxwell, W. C., A.R.I.B.A., 29 Donegall Street.
1892. Maxton, Jas., M.I.N.A., 6 Kirkliston Drive, Bloomfield.
1903. Mayne, H. Horner, 24 Elmwood Avenue.
1917. Megaw, Rev. W. R., B.A., The Manse, Rosetta.
1920. Megaw, I. J., 26 Linenhall Street.
1924. Megaw, W. J., B.Sc., 16 Upper Crescent.
1923. Mercer, Prof. P. S., "Hanging Leaves," Carrickfergus.
1923. Mercer, Mrs. S., do.
1921. Mercier, S. T., J.P., 89 Cliftonville Road.
1925. Merrell, E. J., Campbell College.
1918. Metcalfe, A. W., Hawthornden Road, Knock.
1922. Meyer, Sir Robert, 4 Alexandra Gardens.
1906. Millar, Thomas O., 306 Antrim Road.
1907. Milligan, Miss Bessie, 22 Ravenhill Gardens.
1921. Milligan, Dr. C. J., Dispensary House, Ligoniel.
1921. Milligan, Miss J., 74 Cromwell Road.
1923. Mills, Frederick A. C., 3 Woodland Avenue.
1922. Moffatt, James A., 2 Chelmsford Place, Larne Harbour.
1898. Montgomery, H. C., F.R.S.A.I., 40 Rosemary Street.
1913. Montgomery, Miss E. S., 26 College Green.
1911. Montgomery, Miss Jane E., 8 Sandhurst Road.
1928. Mooney, Miss Helena, 19 St. James Road.

1923. Moore, Kenneth M., The Finaghy.
 1916. Moore, Frank, J.P., Ph.D., F.E.I.S., Home-Lyn, Marlborough Park North.
 1922. Moore, Hon. Wm., D.L., Glassabreeden, Whitehouse.
 1921. Morrison, Miss I., Southleigh, Knockbreda Park.
 1923. Morton, Mrs., 252 Antrim Road.
 1923. Morton, Miss, do.
 1928. Murdoch, Wm. J., 10 Madison Avenue.
 1922. Murray, B., 628 Ravenhill Road.
 1928. Murray, Miss Ada, Eglisli, Cliftonville Circus.
 1923. Muskett, A. E., A.R.C.Sc. (Lond.), 232 Stranmillis Road.
 1923. M' Aleese, Miss Margaret T., 137 Mulholland Terrace, Falls Rd.
 1927. M' Aleese, John, Longland, Whitehouse.
 1923. M' Allister, Wm. James, 134 Rugby Avenue.
 1925. M' Bratney, Miss Margaret, Endsleigh Gardens, Bloomfield.
 M' Bride, A., Rockmount, Templepatrick.
 1923. M' Bride, Miss W., 118 Albertbridge Road.
 1921. M' Callum, Major J. D. M., C.B.E., D.S.O., B.A., Warrenpoint, Co. Down.
 1926. M' Callum, Robert, A.I.C.S., 4 Fortwilliam Place, Shore Road.
 1909. M' Cance, James, 302 Antrim Road.
 1913. M' Cance, Captain Stouppe, 4 Markham Square, London, S.W.3.
 1915. MacCarthy, Mrs., Freshford, Knock.
 1922. M' Carthy, Miss, 46 Stranmillis Road.
 1921. M' Carthy, W. J., Ashley, Alexandra Park, Holywood.
 1919. M' Caw, James, Glenfield, Donegall Park.
 1905. MacCleary, A., Kensington Hotel, College Square East.
 1884. M' Cleery, H., J.P., Oakhill, Dunmurry.
 1926. M' Clellan, Miss Margaret, 148 Earlswood Road.
 1921. M' Cloy, Miss A. E., Cuil-na-Mban, Norfolk Drive, Glen Road.
 1925. M' Clune, Miss A. E., St. Kilda, Sans Souci Park.
 1923. M' Comb, Mrs., 54 Cherryvalley Gardens, Knock.
 1921. M' Comish, John, Benmore, Strandtown.
 1924. M' Connell, Rev. S. G., B.A., Dromara, Co. Down.
 1923. M' Cracken, John A., Downpatrick Street, Rathfriland.
 1926. M' Crum, Wm., Milford, Co. Armagh.
 1922. MacCulloch, Miss Charlotte M., Ballyarton, Killaloo, Londonderry.
 1921. M' Cullough, Miss J. J., 8 Cardigan Drive.
 1921. M' Cullough, Miss S., do.
 1923. M' Cullough, Miss Meta, do.
 1923. M' Cutcheon, Miss J. T., B.A., Rineen, Annadale.
 1917. M' Devitt, H., 115 High Street, Holywood.
 1926. M' Donald, Miss Minnie, 22 Roosevelt Street.
 1924. M' Donnell, Miss Kathleen P., 110 Cullingtree Road.
 1913. M' Dowell, Miss E., Lauraville, Balmoral.
 1926. MacGregor, Miss Sarah, 12 Eglantine Avenue.
 1921. M' Gladery, R., The Brickworks, Springfield Road.
 1923. M' Giffin, Miss, Riverside, Holywood.
 1917. M' Ilroy, R. J., 32 Pandora Street.
 1921. M' Ilwaine, J. E., M.D., 3 Chlorine Gardens.
 1914. M' Kay, Miss E. W., B.Sc., Ardbana Terrace, Coleraine.
 1923. M' Kenzie, Alexander, 60 North Parade.
 1923. M' Kibbin, Fredk., F.A.I., 13 Donegall Square West.
 1906. M' Kinney, Miss M. A. C., Sentry Hill, Carnmoney.
 1922. M' Kisack, Miss M. K., 9 Mount Pleasant.
 1922. M' Knight, Wm. J., 220 Springfield Road.
 1921. M' Laine, Lachlan, Rathaline, Annadale Avenue.

1923. M'Laughlin, Miss Bessie, Y.W.C.A., Edmonton, Alberta, Canada.
1924. MacLaughlin, Francis A., M.B., Thirlestane, Osborne Park.
1922. M'Master, Miss, B.A., Ashbourne, Strandtown.
1912. M'Meekin, Miss A. M., Sunnyside, Carnmoney, Co. Antrim.
1917. M'Meekin, A., J.P., Cogry House, Doagh.
1920. M'Neill, Mrs., Lockabeg, Knockdene Park.
1924. M'Quitty, Rev. John, B.A., Westbourne Manse, Bloomfield.
1901. MacRae, Kenneth, Ulster Agricultural Society, Balmoral.
1924. M'Vea, Miss Florence V., The Crag, Whitehead.
1921. Neill, F. F., 124 Haypark Avenue.
1926. Neill, Miss M., Rhanbury Park, Carrickfergus.
1921. Niblock, J. B., 208 Cliftonville Road.
1921. Niblock, Mrs., do.
- Nixon, Miss M. J., 16 Florenceville Avenue.
1923. Nodder, Charles R., M.A., The Corner House, Lambeg.
1923. Nodder, Mrs. Winifred, do.
1922. Nugent, E. H. S., D.L., Portaferry House, Portaferry.
1923. O'Connor, Hugh, 78 Upper Newtownards Road.
1926. O'Kane, John, 127 Mulholland Terrace, Falls Road.
1923. O'Kane, Dr. M. J., J.P., Cushendall.
1927. O'Neill, Miss C. May, B.Sc., Riddel Hall.
1898. Orr, James, M.B.O.U., 17 Garfield Street.
1923. Orr, R. J., 4th Avenue, Baylands, Bangor.
1924. Orr, William G., 10 & 12 North Street.
1921. Osborne, T. Edens, F.R.S.A.I., 4 College Square North.
1923. Owens, Miss Minnie Y., 29 Indiana Avenue.
1923. Park, George, 28 Cyprus Park.
1921. Parsons, Thomas, Farm Hill, Marino.
1921. Paton, John, Ardmore, Bangor.
1921. Patterson, W. H. F., Auburn, Donaghadee.
1923. Patterson, Miss M. Grace, 54 North Parade.
1924. Patterson, William H., do.
1922. Patton, Wm., 78 Edinburgh Street.
1869. Pim, Joshua, St. Valentine, Hollywood.
1926. Pollock, Rt. Hon. H. M., D.L., 11 College Gardens.
1923. Pollock, James A., Notting Hill.
1923. Polley, W. T., 131 University Street.
1903. Pooler, Rev. Chas. K., D.D., M.R.I.A., D.Litt., Carnbin, Whitehouse.
1922. Porte, G. W. C., 1 Howard Street.
1890. Porter, F. A., 13 Queen's Square.
1921. Porter, Miss Edith, Beechview, Balmoral Avenue.
1883. Praeger, R. Ll., D.Sc., B.A., B.E., M.R.I.A., 19 Fitzwilliam Square, Dublin.
1925. Price, Miss Esther H., 4 Ormiston Parade.
1922. Pringle, Alex., 1 Clarence Street W.
1924. Purce, James, 33 Ravenhill Park.
1923. Quinn, W. J., The Cattogs, Comber.
1923. Radcliffe, Miss, 14 Upper Crescent.
1923. Rankin, Miss, Rosetta P.E. School.
1907. Rea, Miss M. W., M.Sc., Salem House, Sydenham.
1916. Rea, Miss L. C., do.

1926. Rohleder, Dr. Herbert P. T., Royal School of Mines (Geology), Prince Consort Road, London, S.W.7.
1923. Reid, James C., Overton, Balmoral.
1923. Reilly, George E., C.E., 16 Salisbury Gardens.
1919. Reilly, Geo. C., M.I.Mech.E., do.
1925. Rhynehart, John G., F.R.C.Sc.I., D.I.C. (Lond.), Ministry of Agriculture, Wellington Place.
1922. Ritchie, John, Cullintra, Comber.
1923. Ritchie, Miss, 3 Charnwood Avenue.
1923. Ritchie, Miss Helen, do.
1922. Robb, Norman, 65 Ulsterville Avenue.
1923. Robb, S. A., 128 Cliftonpark Avenue.
1921. Robinson, Miss L., 16 Kingsmere Avenue.
1923. Robinson, Miss Maud, Elland, Jordanstown.
1923. Robinson, Miss May, do.
1923. Robinson, Miss J., 16 Camberwell Terrace, Antrim Road.
1927. Robinson, Miss J. M., St. George's P.E. School, Victoria Street.
1928. Robinson, Wm. H., 687 Upper Newtownards Road.
1921. Robinson, W. R., 58 Ravenhill Park.
1921. Robson, Mrs. 81 Wellington Park.
1926. Rogan, Thomas, 143 Springfield Road.
1922. Ruddell, Miss B., 2 Craigmore, Whitehead.
1924. Rundle, Harris, Sefton, Knockdene Park.
1927. Russell, John M., 37 Cooke Street.
1909. Russell, Nelson, Strathmore, Lisburn.
1923. Russell, Alfred, 64 Ravenhill Park.
1927. Rutherford, E. D., M.B., Ch.B., Woodlawn, Knock.
1927. Rutledge, Miss A., 81 Botanic Avenue.
1927. Saeenan, Patrick, Main Street, Greencastle.
1926. Saunders, Cecil E., 10 Prim Street, Albertbridge Road.
1925. Saunders, T. Edgar, 4 Eastern Crescent.
1913. Savage, W. E. J., 8 Lincoln Avenue.
1917. Sayers, Miss W. J., B.A., Bartragh, Knock.
1920. Sayers, Miss J. B., do.
1924. Sayers, Miss M., 61 Clonlee Drive.
1922. Scott, Herbert C., 9 Rashee Road, Ballyclare.
1924. Scott, Miss, Ministry of Agriculture, Wellington Place.
1924. Seaton, Ian William, Plant Breeding Division, Ministry of Agriculture.
- Sefton, Thomas W., St. Aubyn's, Deramore Drive.
1921. Shanks, Edward, 13 Donegall Square W.
1923. Shanks, Mrs. E., Fernagh, Saintfield Road.
1921. Shaw, Miss Louie Hinton, 72 Cromwell Road.
1911. Shaw, G. W., Ulster Bank, York Street.
1923. Shaw, William, Mountstewart, Ballymena.
1926. Shaw, Miss Esme, 11 Shore Street, Holywood.
1926. Shaw, Miss Minnie E., 20 Harcourt Street.
1922. Shearan, Samuel, F.R.C.A., Loughview House, Holywood.
1925. Shearer, Thomas, 3 St. Jude's Avenue.
1922. Shewell, Major, 1 Liscard Terrace, Ormeau Road.
1922. Shewell, Mrs., do.
1905. Shiels, Rev. J. F., P.P., Saintfield.
1921. Shiels, Edward, Summer Hill, Bangor.
1921. Shortt, James, Wilmont, Lisburn.
1926. Simms, Samuel, B.Sc., M.D., 22 Oldpark Crescent.
1921. Sinclair, Robert, 48 Waring Street.
1890. Skillen, Joseph, 25 Stranmillis Gardens,

1920. Small, Professor J., D.Sc., Queen's University.
 1922. Small, James M., Ballymenoch Park, Marino.
 1922. Smiley, Miss, 19 Salisbury Avenue.
 1924. Smyth, John, M.A., LL.B., Donard, Cregagh, Belfast.
 1924. Speers, John, Belfast Bank, Ballyclare.
 1927. Standfield, Miss Henrietta, 31 Virginia Street.
 1921. Steed, George G., 13 Donegall Square West.
 1922. Steed, Mrs., do.
 1893. Steele, Miss, Dooneen, Marlborough Park.
 1921. Steen, Rev. David, B.A., The Manse, Islandmagee.
 1910. Stelfox, Mrs. A. W., B.Sc., A.R.C.Sc.I., 14 Clareville Road, Rathgar, Dublin.
 1911. Stendall, J. A. S., M.R.I.A., M.B.O.U., The Museum, College Square N.
 1923. Stendall, Mrs. J. A. S., Deva, Haypark Avenue.
 1904. Stephens, Captain J. Kyle, J.P., 13 Donegall Square North.
 1922. Stephens, Samuel, 13 Donegall Sq. N.
 1925. Steven, George, 2 Kinnaird Terrace, Antrim Road.
 1925. Stevenson, John H., 2 George's Terrace, Ballysillan.
 1894. Stewart, W. J., 105 Baker Street, London, W.1.
 1923. Stewart, Albert K., 10 North Parade.
 1925. Stewart, Rev. Robert, B.A., 356 Ravenhill Road.
 1919. Strain, W., Windsor Park.
 1924. Stronge, Robert, 86 Cliftonville Road.
 1923. Stuart, C., 7 Eblana Street.
 1924. Swan, H. S., Ardelan, Buncrana, Co. Donegal.
 1922. Sweeney, Wm., 183 Cliftonville Road.
 1925. Tate, Miss Isabelle, Chlorine, Clonevan Road, Lishburn.
 1921. Tate, Jas., M.P.S.I., 7 and 9 Royal Avenue.
 1923. Tate, Robert E., 17 Clifton Drive.
 1922. Taylor, Frank, St. John's, Marino.
 1926. Taylor, P. A., 7 Delaware Street, Ravenhill Road.
 1920. Tedley, Miss, Rosetta School.
 1926. Thompson, John D., 110-111 Scottish Provident Buildings, Donegall Square W.
 1921. Thompson, Joseph, Altorf, Holywood Road.
 1921. Thompson, Wm., Lauriston, Derryvolgie Avenue.
 1922. Thomson, Dr. Ross, Queen Street, Ballymoney.
 1921. Thomson, Richard, Cable Road, Whitehead.
 1922. Thomson, James, 20 Station Street.
 1922. Torney, Henry C. S., F.R.S.A.I., The Moat, Holywood.
 1875. Traill, W. A., M.A., F.R.S.A.I., Red House, Bushmills, Co. Antrim.
 1921. Trimble, Andrew, M.B., D.P.H., J.P., Tyr-owen, Downview Avenue.
 1921. Turner, S., jun., 142 Cliftonpark Avenue.
 1925. Turner, Edmund, A.R.C.Sc.I., 1 Dunowen Gardens.
 1922. Turner, Rt. Hon. Sir W. G., D.L., J.P., Hampton Park (Lord Mayor).
 1904. Turtle, W. Haydock, Lumeah, Malone Road.
 1909. Turtle, Mrs. N. S., Rosemount, Knock.
 1925. Uprichard, W. T., 326 Springfield Road.
 1922. Verner, Miss, Tyrone, Cranmore Park.
 1926. Vincent, J. H., Mus.B., 80 Gt. Victoria Street,

1920. Ward, Miss Alice, Albert Villa, Sydenham.
 1921. Ward, Francis E., Ridgeway Street, Stranmillis Road.
 1923. Ward, A. H., 5 Tennyson Avenue, Bangor.
 1919. Warnock, Miss, 1 Cameron St., Botanic Avenue.
 1925. Watchorn, Miss Mary E., 226 Cliftonville Road.
 1921. Watson, Frank W., 10 Cranmore Gardens.
 1913. Watson, Mrs. F. W., B.Sc., do.
 1923. Watson, Miss S., Firbeck Cottage, Sydenham.
 1924. Watters, Miss Ella, Holywood.
 1925. Webb, Miss E. M., Rath House, Shandon Park.
 1924. Wegg, George R., Glynn Villas, Larne.
 1927. Weir, Miss K., Bangor Collegiate School, Bangor.
 1920. Weston, Wilfred W., 14 Donegall Square West.
 1924. Weyms, David, 19 Cranmore Gardens.
 1923. Wheeler, Norman F., 1 Fitzwilliam Street.
 1877. Whitla, Sir William, M.D., J.P., M.P., Lennoxvale House.
 1927. White, Miss Jeanne M., 18 Carleton Street, Portadown.
 1926. Whitehouse, Rev. Sydney P., 107 Fitzroy Avenue.
 1927. Whyte, Mrs. Elizabeth F., 10 Orient Gardens.
 1923. Wight, Robert J., 9 Stranmillis Street.
 1927. Wilkinson, Miss D. H., 23 Ashley Avenue.
 1927. Wilkinson, Wilfred Frederic Samuel, Northern Banking Co.,
 Armagh.
 1917. Williamson, James, J.P., Sandown Park, Knock.
 1923. Willis, Miss A., 3 Avonmore, Balmoral.
 1893. Wilson, George, 17 Bedford Street.
 1901. Wilson, Prof. Gregg, O.B.E., M.A., D.Sc., M.R.I.A., Transy,
 Beechlands, University Road.
 1925. Wilson, Miss Anna, 28 College Park Avenue.
 1924. Wilson, Miss Edith, do.
 1924. Wilson, W. E., 31 North Street.
 1904. Wilson, Mrs., do.
 1928. Wilson, Miss Agnes, 127 Crumlin Road.
 1928. Wilson, Miss Tessie, do.
 1923. Woodburn, Rev. J. B., D.D., 78 Eglantine Avenue.
 1901. Workman, W. H., F.Z.S., M.B.O.U., Lismore, Windsor Ave.
 1923. Worth, Miss E. A., 2 Shandon Park W., Cliftonville Road,
 Bangor.
 1922. Younge, W. G., Town Hall, Larne.
 1924. Young, Robert A., B.A., 80 Rugby Avenue.

Junior Members.

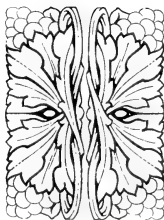
Date of
election.

1928. Ardis, Robert F., Marine Parade, Holywood.
 1927. Auld, Henry, 201 Cavehill Road.
 1924. Blair, Jack Coulter, 33 Ophir Gardens.
 1922. Blake, F. R. D., 4 Knock Road, Knock.
 1923. Blake, P. H., 4 Knock Road, Knock.
 1925. Boyd, Jeannie, Islandbane, Killinchy, Co. Down.
 1926. Bradshaw, Keith, Provincial Bank of Ireland, Royal Avenue.
 1927. Bradshaw, Kenneth, 28 Bawnmore Road,

1927. Brady, Vera, 75 Fitwzilliam Street.
 1925. Brown, John, Whiterock, Ballygomartin Road.
 1923. Bryans, Harold, 284 Shankill Road.
 1927. Burns, Maureen, 1 Adela Place, Antrim Road.
1927. Campbell, Doreen, 57 Clifton Park Avenue.
 1925. Capper, Rosaleen, 3 Mentmore, Lisburn Road.
 1927. Cassidy, Wm., 6 Bawnmore Road.
 1927. Cassidy, Fredk. do.
 1927. Charlton, Dorothy, 2 Church Avenue, Holywood.
 1927. Charlton, Kathleen, do.
 1926. Cleeland, Marjorie, 13 Eglantine Gardens.
 1928. Cole, Jean, 109 University Gardens.
 1925. Cormick, Alister, 18 Kelvin Parade.
 1923. Crawford, Agatha R., Easthope, Bawnmore Road.
 1920. Crawford, Ronald Hislop, Orissa, Marlborough Park South.
1925. Dalzell, May, 27 Rossmore Avenue.
 1927. Davidson, R. H., 183 Alexander Park Avenue.
 1927. Deane, Campbell D., Mt. Nephim, Saintfield Road.
 1926. Deans, Joan, 141 Ormeau Road.
 1927. Dixon, Albert, 28 Queensland Street.
 1925. Dixon, Peggy, 5 Verdun Terrace, Ballygomartin Road.
 1926. Dunbar, David, 28 Broadway.
1925. Fisher, Nora, Inishglass, Greenisland.
 1927. Forsythe, Doris K., 8 Maryville Park.
1927. Getty, Kathleen, 16 Clifton Park Avenue.
 1926. Gibson, Moira, Montpelier House, Malone Road.
 1923. Gibson, Sinead (Miss), Ardamine, Ravenhill Road.
 1926. Glendinning, Alice, 1 Lennoxvale.
 1924. Glendinning, Ethne, do.
 1925. Glendinning, Joan, 26 Sans Souci Park.
 1927. Glendinning, Margery, do.
 1925. Glendinning, Barbara, do.
 1926. Gotto, Helen, 16 Adelaide Park.
 1927. Green, Vivian (Miss), 41 Kingsmere Avenue.
1926. Hall, Willie, 16 Capstone Street.
 Hamilton, Isabel, 11 Rosetta Avenue.
 1925. Hayden, Thomas E., 54 Cliftonville Road.
 1926. Henderson, James M., 33 Indiana Avenue.
 1926. Hind, John Quintus C., 22 Cliftonville Road.
 1926. Howatt, James, 42 Cherryvalley Gardens.
 1928. Howatt, Agnes, do.
 1926. Hughes Frederick, 50 Victoria Gardens.
 1926. Hughes, George, do.
 1926. Hunter, George W., 16 Easton Crescent.
1927. Jardin, Sylvia, Hannahstown, Dunmurry.
 1927. Johnston, Annie, 1 University Road.
1924. Kerr, Mary, Mount Carmel, Bloomfield.
 1924. Kerr, Thérèse, do.
 1924. Kerr, Michael, do.
 1926. Kerr, Charles, do.
 1925. Kilpatrick, Charles Victor, 3 Easton Avenue.

1925. Law, William, 52 Hopefield Avenue.
 1924. Loewenthal, Joan, Lennoxvale.
 1926. Loewenthal, Peggy, do.
 1925. Loughridge, W. N., 173 Cliftonville Road.
 1927. Lyster, Gwennie, Sunnyville, The Mount
1927. Macauley, Dorothy, 17 Landscape Terrace.
 1925. Macdonald, Ranald, 94 Antrim Road.
 1925. Macdonald, Angus, do.
 1924. Macoun, Caroline Phyllis, 28 Osborne Gardens.
 1926. Magill, Ed. W., 82 Hill Street, Lurgan.
 1927. May, Ernest Langton, 4 Windsor Avenue
 1925. Maybin, Nora, Antrim Road, Lisburn.
 1927. Megaw, Elizabeth, Breckagh, University Road.
 1926. Middleton, Colin, 28 Chichester Avenue.
 1927. Murray, H. Nicholl, 3 St. Jude's Avenue.
1926. M'Cleery, Kitty, Ava House, Old Cavehill Road.
 1925. M'Clelland, Cecil, 17 Carlisle Street.
 1926. M'Cloy, Norman, 13 Queensland Street.
 1926. M'Guigan, Arthur, 31 Beechfield Street.
 1927. M'Intyre, Molly, Mary Villa, North Parade.
 1925. M'Kee, Phyllis, 27 Deramore Avenue.
 1925. M'Keown, Lois, Marlands, Dunmurry.
 1925. M'Meehan, Peggy, 15 Wellesly Avenue.
 1925. M'Nally, Isabel, 65 Woodvale Road.
 1926. M'Portland, Robert, 8 Mountpottinger Road.
 1927. M'Williams, John, 119 Cavehill Road.
1927. Nagle, Dermot, 4 Riverview Street, Stranmillis Road.
 1927. Napier, Joseph, 28 Wellington Park.
 1924. Neill, Norah, Linfield Villa, Windsor Avenue.
1926. Orr, Bessie, 33 Ardenlee Road.
 1926. Orr, Brian, do.
1925. Parke, Jack, 82 Bawnmore Road.
 1927. Pink, Janey Fletcher, Iveagh, Bessbrook, Armagh.
 1927. Porter Betty, 1 Adela Place, Antrim Road.
1927. Rainsford, Marie, Haslar, Upper Galwally Park.
 1923. Rankin, James, 27 Toronto Street.
 1927. Rattenbury, Mary, The Ferns, Kirkliston Drive.
 1924. Reilly, Grier, 16 Salisbury Gardens.
 1923. Robinson, Inez (Miss), Terrace Hill, Shaw's Bridge.
 1925. Rodgers, Annie, Deramore Drive.
 1925. Russell, Margaret, 4 University Square.
1927. Shott, Fanny Gladys, Merton, Knockbreda Road, Cregagh.
 1926. Smith, William, 32 Oceanic Avenue.
 1925. Stanfield, Doreen, 14 Dunluce Avenue.
 1925. Stanfield, Phyllis, do.
 1923. Stendall, Nora, 105 Haypark Avenue.
 1925. Steven, Isabel, 3 Kinnaird Terrace.
 1925. Steven, Nancy, do.

1927. Stewart, Henry I., 356 Ravenhill Road.
1927. Stewart, John D., do.
Strain, Robert W., 9 University Square.
1925. Surgenor, Maisie, 83 Enfield Street.
1923. Symmers, Patricia, 23 Windsor Avenue.
1923. Taylor, Norman R., 7 Delaware Street.
1923. Thompson, John B., 29 Glendower Street.
1925. Thompson, James C., 1 Manor Street.
1921. Walshe, Joseph, 50 South Parade.
1925. Warnock, Angela, Wellington Park.
1925. Watson, Betty, Lismore, Rosetta Park.
1926. Watson, Frank, do.
Watson, John H., Rosemount, Knock.
1927. Whisker, Dora, 14 Vicinage Park.
1925. Wilson, Basil, 50 Mountpottinger Road.
1926. Wilson, Maureen, 10 Ravenhill Park.
1925. Wilson, Peggy, 5 Fortwilliam Avenue, Ormeau Road.





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